CATCHING'S COMPENDIUM

—OF—

PRACTICAL DENTISTRY

FOR 1892.

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TREATING PUTRESCENT PULPS AND FILLING ROOTS.

DR. A. W. HARLAN.

Dental Review, December.

In answer to the following question, Dr. Harlan gives his method of treating:

"If an upper second molar with putrescent pulp is presented, and you decide to treat and fill roots, how would you proceed in detail? The patiênt in good health, and mouth otherwise in good condition."

Answer. Apply the rubber dam and wash the crown with a saturated solution of sodium fluo-silicate. Open the pulp chamber with clean sterilized drills. Wash the pulp chamber with equal parts of proxide of hydrogen and 1-1000th solution of bichloride of mercury. Do not attempt the removal of the putrescent pulp at this time. Apply two small pellets of cotton, wet with myrtol and cassia, equal parts; introduce over these a piece of blotting paper, wet with liquid vaseline, and seal the cavity with soft gutta-percha. Make a perforation with a hot instrument through the gutta-percha, not producing pressure. If the tooth is elongated or protruding from the socket, carefully counterirritate the gum with tincture of capsicum and chloroform, equal parts.

At the end of four or five days it will be safe to remove the dressing, under the strictest antiseptic precautions, and remove the remains of the pulp from the roots. They are to be carefully freed from all animal matter, and washed with boro-glycerine water, one in ten. Fill the roots loosely with shreds of cotton, wet with myrtol alone; adding to it to correct the taste some oil of cloves or wintergreen. Seal the cavity carefully as before in the same manner. Leave the case for ten days, when, in nearly every instance, the roots may be filled with safety to the patient.

The reason for perforating the gutta-percha plug is to be certain of the escape of any gas formed or to be formed, and to insure

against the error of producing pressure on the apical end of the root. In some cases it may do to remove the whole pulp at the first visit, but the safer plan is to sterilize the contents of the root and the root itself by the use of drugs before the attempt is made to remove it. If pus oozed out of the pulp chamber when it was opened the removal of it is indicated, but instruments should not be passed high up in the roots, at all events, during the first sitting.

Broaches should be scrupulously clean. The roots must be absolutely dry, using cold air instead of hot to effect this object. When ready to fill the roots, moisten their interior with eucalyptol, or cajuput. Then introduce chloro-percha, working it into the roots with a smooth broach; afterward take gutta-percha cones, cold, sticking a small pointed instrument into the large end and force them home. If the buccal roots are too fine to receive cones be careful to work all the chloro-percha possible into the roots and then force, with a blunt-ended instrument, softened gutta-percha into the roots with a churning motion until you feel sure that they are well filled. If there is no good reason to the contrary, the crown cavity may be filled at once; otherwise wait a few days.

Dr. A. W. McCandless, in the same journal, gives his method as follows:

Having adjusted the rubber dam, carefully remove all debris from pulp chamber. The pulp canals are cleansed with cotton shreds wrapped upon smooth broaches of proper size for easy insertion into the openings. This operation must be repeated time and time again until the cotton shreds show no traces of putrescent matter. The canals are now washed, first with chloroform then with alcohol, to absorb all possible moisture, after which hot air is employed. Shreds of cotton saturated with myrtol are placed in each root and the opening sealed with gutta-percha to exclude moisture. In twenty-four hours remove myrtol and seal oil of cassia into the cavity as before, rubber dam always being used to prevent moisture from gaining access. This may remain in the pulp cavity for three or four days, when, if all is "quietness and peace," the roots will be found nice and sweet and ready for the filling. If, however, any soreness should supervene, another application of the oil of cassia should be made and more time given.

Everything being in readiness for the filling, moisten the sides of the pulp canal walls with cajuput or eucalyptol to facili-

tate the passage of chloro-percha, which is now pumped into the canals. Follow this with gutta-percha cones which have been previously fitted to the canals, soften the gutta-percha with heat, place in the pulp chamber a ball of soft rubber and by pressure upon the rubber, with some blunt instrument, force the chloro-percha up until the patient gives evidence of pain, when you may feel reasonably certain that those roots are filled.

Success depends fully as much upon the mechanical skill and conscientious, painstaking thoroughness with which these roots are cleansed and afterward filled as upon the therapeutic value of the medicaments employed.

This method of procedure will apply to any of the teeth as well as to the upper second molar.

DESTROYING PULPS AND FILLING ROOTS OF MOLARS.

DR. W. C. BARRETT.

Dental Practitioner and Advertiser, January, 1893.

The following question has been sent us with the request that it be answered in these pages:

"If a superior second molar, with pulpitis and pericementitis to the extent of soreness is presented, and you decide to destroy and remove the pulp and fill the roots, how would you proceed in detail, the patient being in good general health and the mouth in fair condition?"

The second molar presents but few complications that are not found in the first. It is further back in the mouth, and hence a little more difficult of access, but the roots or pulp chambers do not differ materially. The first symptom that demands attention is the pulpitis, for the pericementitis is dependent upon that. If there be considerable congestion of the pulp, it sometimes is not easy to destroy it without considerable pain. Usually, however, this will yield when the cavity of decay, which we will assume is the cause, has been cleaned out, and the pulp thoroughly exposed and bled. If not, tincture of aconite will give relief.

Of course it makes a great deal of difference where the cavity

of decay is. If it is in the occluding, or mesial surface, there will be little trouble. If it is upon the distal aspect, the task will demand more care and skill. In either case, the cavity should be thoroughly rinsed with warm water, using repeated douches. With enamel chisels the cavity should be opened up so as to allow free access. The rubber dam should be applied, and the cavity dried out with the hot air blast. Usually this will obtund the tissues sufficiently to allow working without severe pain. If it does not, carbolic acid may be used, and the decayed tissue and debris should then be as thoroughly removed as possible. All pain will by this time usually have ceased. If it has, the pulpitis will give no further trouble. If not, medication with aconite may be necessary. If there be excessive tenderness in the living pulp, this may be overcome by applying a solution of cocaine.

I know of no better devitalizing application than that recommended by Dr. Miller, in the July number of this journal. It consists of equal parts of arsenious acid and cocaine hydro-chlorate, mixed into a paste with a sufficient quantity of carbolic acid. A little—a very little—of this should be placed in a minute cup of tin or lead, prepared as follows: From a sheet of tagger's tin, or rolled tin, or lead, punch out, or with the shears cut out, a disk of a sufficient size to cover the bottom of the cavity. Place it upon a piece of soft wood, and with the rounded end of an excavator handle indent it until it has a cup-shaped depression. Put the arsenious acid mixture in this, and carry it to place over the exposed pulp.

My usual way is to cover this with a pledget of cotton dipped in chloro-percha. Miller recommends the oxy-sulphate of zinc, or even plaster of paris, and these, no doubt, have their advantages. But by the use of the protecting disk, pressure upon the exposed pulp by a cotton plug may be avoided. Leave this application in the cavity about forty-eight hours. It may probably be left longer without danger, but at the end of two days usually, the pulp is thoroughly devitalized, and without sensation.

At the end of this time the dressing is removed, using the rubber dam as before. The pulp chamber is opened thoroughly, and an antiseptic introduced. This may be one of the essential oils, or it may be our old and much abused, yet excellent friend, carbolic acid. I propose to coagulate the ends of the dentinal

fibrillæ, if it has not already been done, which is most probable. The cavity is then sealed up again for another two days, when it is once more opened under the same precautions as before. A delicate Donaldson barbed broach is now introduced into the root canals, turned a little and withdrawn, usually with the pulp clinging to it. I do this for each of the three roots—if I can—then introduce cotton wound upon a delicate smooth broach, and dipped in some antiseptic liquid, carrying them as near to the apex of the roots as possible, and again seal the cavity up, unless there be some urgent necessity for haste.

When ready for filling the roots, do it with chloro-percha, pumped into each one with a smooth broach. When satisfied the root canal is full, introduce a gutta-percha point, and that root is supposed to be effectually sealed for all time.

I said that I go to the apex of each of the three roots if I can. Unfortunately this is not always practicable. I may state it stronger than that, and say that it is not often possible. The conformation of the roots will not permit. There is usually but little difficulty in finding and reaching the apex of the lingual root, but the other two are not as accessible. In the first place, both the anterior and posterior buccal roots are frequently curved, the flexure usually being forward. This makes the anterior root canal hard to find and follow, even if the opening be patulous. If the cavity of decay be upon the distal surface, it is absolutely essential that it be extended up through the coronal surface, quite to or past the central pit. The openings of all the roots must positively be uncovered.

If with a delicate broach I find that I cannot penetrate either canal, or for but a short distance, I seal the cavity up with chloro-percha, first introducing into it a small pledget of cotton wet with an antiseptic, and leave it for a week or ten days. By this time the contents of that canal will have sloughed away, or at the least will have separated from all attachments, and will come away of its own accord, without putrefaction. I can then treat and fill the canals as well as possible. If they are too small to admit the most delicate broach, I have not much fear of their containing sufficient matter, even though it have putrescent possibilities, to cause any harm. I cannot believe that the contents of the dentinal tubuli ever become septic. They are too small to permit the entrance of

putrefactive organisms, or if not, the amount of putrescible matter is not sufficient to produce septic complications.

To a much less extent is this true of those root canals that are too small for the entrance of a fine broach. If time enough be given for the sloughing of the canal contents, and if then they are subjected to the penetrating action of an antiseptic, and finally if the mouth of the canal is hermetically sealed with gutta-percha, I will take my chances with it. There is, in fact, nothing else to do, for my wildest flights of imagination do not reach to the point of successfully drilling out such roots as these, with any possible kind of a drill.

The posterior buccal root has even another possible complication. It is apt to be wide and flat, and very thin in the center, the canal having the same characteristics. At either lateral border of the root there may be a channel, while in the center it is very much constricted, or even obliterated. There may be chambers somewhere along the course of the canal, which it will be utterly impossible thoroughly to clean out. There is absolutely no way of removing any pulp tissue from them, except by the slow process of allowing it to disintegrate and slough out, antiseptics being excluded, for they would tend to prevent this. If the pulp chamber be open, this may sometimes be permissible, trusting to the penetrative power of antiseptics thoroughly to cure them afterward.

But with the utmost care and thoroughness there will be cases presented in which it is quite impossible to be sure of the condition of the roots. At least I find it so in my practice, for I am not one of those who can see to the bottom of an impenetrable root canal. But with thorough antiseptic treatment, I have little fear of any subsequent trouble from such roots.

It may be urged that all this is a very tedious and prolonged process. Well, if the dentist is not prepared to give to the case all the time and attention necessary, he had better not undertake it. The proper treatment and filling of the roots of a superior second molar tooth is a process that requires care, and patience, and skill, and he who does not possess enough of the last two to insure the first, can never take rank as a successful operator.

CANADA BALSAM WITH GUTTA-PERCHA FILLING.

DR. A. M. HOLMES.

Dental Cosmos, December.

Dr. Holmes has a method of using Canada balsam with gutta-percha fillings, in which he, having first evaporated the solvent from the balsam, moistens it with chloroform, then lines the cavity with the solution and fills with gutta-percha, finishing the filling with tape moistened with chloroform. This makes a filling which will not leak, and the gutta-percha will be held so fast to the cavity that it cannot be pried off, but will be pulled to pieces before it will leave the tooth. He has used gutta-percha in this way under amalgam fillings for the prevention of pain from the changes in temperature.

CAPPING PULPS.

DR. W. D. MILLER.

Dominion Dental Journal, July.

The writer uses Fletcher's cement (an oxysulphate) mixed to the consistency of thick cream, a small particle of which is allowed to fall upon the exposure, which spreads over it, and is allowed to harden. Over this other cement is placed; if it is a doubtful case, it is finished with oxysulphate, if not, with oxyphosphate.

COMBINATION AMALGAM FILLING.

DR. E. BERGSTRESSER.

Western Dental Journal, August.

The cavity is filled with copper amalgam until it comes just to the edges of the walls, while the center is left hollow; finish out the corners of the filling with some good alloy, until it is brought flush to the surface. In this way can be obtained the virtues of each amalgam and the defects of each avoided.

TO DIAGNOSE TEETH AFFECTED BY GALVANIC CURRENTS AND THERMAL CHANGES.

DR. S. B. PALMER.

Dental Cosmos, January.

With a piece of zinc, which may be held with an instrument, wet the surface with the saliva of the mouth, touch the fillings as you would tap a tooth to detect soreness; the current will detect the tooth affected beneath the filling.

The writer says where this electrical action has gone on for some time, the dentine under the filling will be found decomposed. To overcome this action, he uses Canada balsam or copal in chloroform as a varnish under the fillings.

TO PREVENT SHOCK THROUGH AMALGAM FILLING.

DR. G. F. CHENEY.

Ohio Journal Dental Science, July.

The writer reports relieving several cases of shock through amalgam fillings by drilling a hole in the tooth and filling it with gold, so that the gold connected with the dentine and amalgam filling.

ABSCESS EVACUATOR.

DR. T. H. HUNTER.

Dental Cosmos, January.

Take one of Wood's patented polishing cups and plug the mandrel-hole with a piece of gutta-percha, which must not project on the inside of the cup. Then wet the inside of the cup, and place it over the gum so as to cover the opening into the abscess. Gently press the cup flat upon the gum, and upon removing the finger the elasticity of the cup will cause sufficient suction to fill the cup with the contents of the abscess; repeated action will evacuate it. Medicaments placed in the tooth cavity may likewise be drawn through the sinus.

CRYSTAL GOLD AND GOLD FOIL COMBINED.

DR. N. W. WILLIAMS.

International Dental Journal, February.

Place some soft gold-foil, either in the form of rope or cylinders, against the wall or part of the cavity where the filling is to begin, and with the pliers take up a piece of the crystal gold sufficient to cover the foil, and hold it in the flame of the spirit lamp until it is heated to redness; place it against the soft foil, and with the mallet drive it home, at the same time, with an instrument in the left hand, holding the soft gold in position until the first piece is perfectly condensed. Then proceed in the same manner until all of the walls are covered or lined. After all the walls are covered, and the soft foil having been allowed to come up to and cover the margins, proceed with the filling, using alternately the crystal gold and foil, but annealing or heating each piece of foil, as well as the crystal gold.

PULP CAPPING.

DR. LOUIS JACK.

Dental Cosmos, January.

After touching the pulp with pure carbolic acid, a paste composed of oxide of zinc with a nearly saturated solution of aristol in gaultheria is flowed over it.

GUTTA-PERCHA AND TIN.

DR. J. E. LINE.

Dental Cosmos, February.

The writer speaks well of tin and gutta-percha mixed as a filling for very frail teeth. A layer of gutta-percha and a layer of tin-foil alternately. The mass can be rolled and cut into cylinders or pellets. The tin should be perfectly free of grease, and is better to have the surface roughened.

FILLING FOR DECIDUOUS TEETH.

DR. S. E. GILBERT.

Dental Cosmos, March.

In filling deciduous teeth it is often almost if not quite impossible to exclude moisture from the cavity sufficiently to permit filling with zinc phosphate, unless the rubber dam is used. The difficulty may be overcome in the following manner: Place some of the powder on a glass slab, also a little of the fluid, and beside these a little chloro stopping. (Chloro stopping is made by dissolving Gilbert's white temporary stopping in chloroform.) Make a rather thin mix of the zinc phosphate, then add to this the chloro stopping, mixing in more of the powder until a thick putty-like consistency is obtained; now napkin the mouth, and dry as well as possible, immediately packing to place, and finishing with burnishers.

PULPS, COCAINE IN REMOVING.

Dental Cosmos, February.

Dr. C. W. McCall succeeds well in removing pulps by fully exposing them and placing thereon crystals of cocaine which dissolve readily, producing the required anæsthesia.

CEMENT BASE FOR GOLD FILLING.

Dental Cosmos, February.

Dr. H. A. Smith says a mat of crystal gold set quickly into cement placed in bottom of the cavity, makes a good foundation for a gold filling.

PULP, INFLAMMATION, TO REDUCE.

International Dental Journal, February.

Dr. Williams says when the pulp is inflamed, to reduce it by applying bi-carbonate of soda for several hours before applying arsenic for its destruction.

PULP STONES, DIAGNOSIS AND TREATMENT.

DR. R. OTTOLENGUI.

International Dental Journal, April.

After citing many cases, the doctor draws the following conclusions:

First. Intense pain without decrease of sensibility, following the use of arsenic, is a reasonable sign of the presence of pulp-stones.

Second. Intense pain following a probationary filling, whether immediately or after an extended period of time, there being sensibility in the dentine, and no symptoms indicating other disease, the pulp not being exposed, pulp-stones are to be suspected.

Third. Where it is suspected that pulp-stones are present, arsenic must not be used, and if it has been used once, it must not be repeated. The pulp must be extirpated under an anæsthetic.

Fourth. Where pulp-stones have been removed till soft tissue is reached, arsenic must not be used for controlling the sensibility of the remainder. It is preferable to use an anæsthetic.

Fifth. After the removal of pulp-stones, it is not safe to insert a permanent filling immediately; the canals may be filled, but should be covered with a readily removable probationary filling.

PROTECTOR FOR SORE TOOTH.

DR. W. B. HURD.

Dental Review, May.

To prevent occlusion on a sore tooth, mold a piece of gutta-percha on the one adjoining, and let it be worn until the tenderness has passed away.

FOR DRYING CAVITIES.

Dental Review, May.

For quick drying of cavities after the rubber dam is in place, fill the cavity with chalk and blow it out with a chip-blower. It may be used to dry a wet ligature which it may be inconvenient to remove.

NON-COHESIVE GOLD FILLING.

DR. C. H. GERRISH.

International Dental Journal, April.

Use Abbey's foil, Nos. 3 and 4, nothing heavier. Take a sheet and fold the edges together, once, twice, thrice, smoothly, making a ribbon of eight thicknesses of foil, about one-half inch wide, then roll or twist into a coil or rope, being careful to keep the surface of the foil smooth. Now with scissors cut the same into pieces just long enough to suit the cavity to be filled. [By that he means that one end of the coil shall touch the bottom, the other projecting just beyond the orifice.] With tweezers or pliers take up a piece of foil and carry the gold into one corner or angle of the cavity, cut end down, so the coil shall stand on end, condensing towards the distant wall. Using the side of the plugger, another piece is placed alongside, and still another, until the angle is reached. The size of the cavity is now reduced. Repeat this operation until the last coil is in position. With the point of the plugger condense the surplus gold projecting above the tooth, keeping the same well over the cavity. This is important. In condensing the gold you will find the weak places in the plug. Send the instrument well to the bottom of the cavity, using lateral wedging pressure. Fill up this pit and look for another. If possible, make these pits a little way from the enamel of walls, so as not to mar or grind the tooth under the instrument. Each piece of foil introduced in this way acts upon the filling as the key-stone to the arch, the filling being a series of arches. After this is gone through with to satisfaction, use the burnisher, and use it thoroughly. And just here, are the saving qualities of soft foil seen; the surplus gold in a great measure disappears.

What becomes of it? Every piece of gold presents its edge or end to the action of the burnisher (he likens the filling to a bunch of asparagus standing on end?), and the action of the burnisher has forced, swaged, molded, or moved the mass in the same manner, but to a less degree, "than the warm burnisher does the gutta-percha plug," bulging the gold outward towards the walls of the cavity, filling up every inequality and securing for you a perfect stopping.

TREATING EXPOSED OR PARTIALLY EXPOSED PULPS.

DR. T. B. WELCH.

Items of Interest, March.

First saturate the cavity with "heaven's cordial," the formula of which is as follows:

Alcohol	1 ounce.
Chloroform	2 ounces.
Sul. ether	$\frac{3}{4}$ ounce.
Gum camphor	$\frac{1}{2}$ ounce.
Tr. opium	$\frac{1}{8}$ ounce.
Oil cloves	$\frac{1}{2}$ drachm.

And a little of the following mixed with it: One part oil cloves, three parts carbolic acid made into a soft paste with tannin. If you have not heaven's cordial, use in its place chloroform. Then clean away all dèbris from the cavity, as well as you can, without disturbing the pulp. Be careful not even to lift the thin, leathery layers of softened dentine from over or near it; for the less the pulp is disturbed the surer the treatment. Cut down weak walls, and be as thorough in preparing the cavity for filling as possible, without impinging on the pulp. Rub a little of the obtundent in the cavity (but not enough to saturate), and over this flow a coating of chloro-percha. Blow on warm air to evaporate the chloroform, and then fill the cavity with oxyphosphate, put in rather thin, so as to avoid all pressure, and also so that it will stick to the walls of the cavity.

In from four to six weeks the pulp will be incased in a beautiful tanned covering. This should not be disturbed.

VASELINE ON COTTON FOR COVERING DRESSINGS.

Dental Review, May.

Liquid vaseline may be used to saturate cotton as as temporary covering for medicaments in the root of a tooth when it will not bear the pressure of varnish or gutta-percha. It will endure for two or more days without becoming foul.

APPLYING ARSENIC TO PULPS.

DR. F. FRENCH.

Dental Practitioner and Advertiser, April.

Having made a free opening, touch the exposed portion with pure carbolic acid, then take a piece of crystal arsenic, and with a knife or instrument scrape a very little of it into powder. Twist a piece of cotton the size of a pin-head on a smooth nerve instrument, so loosely that it is easily detached; moisten it with carbolic acid and take up as much of powdered arsenic as will adhere to it, and place it upon the exposed pulp, but without any pressure. Then place a small concave metal disk over it, in such a manner that it rests upon the walls of the cavity, and effectually prevents any pressure upon the pulp. Fill carefully with gutta-percha, and if there is no pressure there will be no pain.

STERILIZING DENTINE.

DR. H. A. SMITH.

Dental Cosmos, February.

Where a portion of decalcified dentine has to be left over the pulp, sterilize it with equal parts of oil of cassia and oil of cloves. Dryness is very necessary, which is best obtained by alcohol and hot air.

VASELINE ROOT FILLING.

DR. VAN WOERT.

International Dental Journal, April.

℞ Iodol .... gr. x.
Zinci oxidi .... gr. xx.
Ol. cinnamoni .... gt. v.
Vaseline carbol. .... q. s.

Mix at a temperature of 140° F., to form a stiff paste.

This paste is so thick and dense that it can be rolled into shape very similar to the gutta-percha points manufactured for filling root-canals.

DEVITALIZING THE DENTAL PULP.

DR. W. D. MILLER.

Dental Practitioner and Advertiser, July.

With occasional exceptions, he adjusts the rubber dam where arsenic is to be applied, then bathes the cavity thoroughly with carbolic acid, and removes the decayed dentine as thoroughly as possible without producing unnecessary pain. He finds it desirable, as others do, to have a large surface of exposure to which to apply the arsenic, but applies it to a small exposure rather than give the patient pain in the attempt to enlarge it. Now place two or three drops of carbolic acid upon a glass slab, and add as much of the hydrochlorate of cocaine as it will dissolve. A pledget of cotton, supersaturated with this solution, is placed in the cavity and left there while preparing the paste. Have in a small bottle a preparation consisting of equal parts of acidum arsenicosum and morphinum muriaticum, with just enough carbolic acid to hold them together (not to make a paste). Take a bit of this, a little larger than a pinhead, and make a paste of it with the saturated solution of cocaine in carbolic acid. Remove the pledget of cotton from the cavity, take the paste upon the point of a suitably shaped excavator, and apply it directly to the point of exposure. Over this place a small, flat pledget of cotton, well saturated with the cocaine-carbolic acid solution, being careful not to let the cotton extend over the margin anywhere, and avoiding every trace of pressure.

As far as the action of the cocaine is concerned, he has no doubt the same result may be obtained by incorporating the crystals with the ordinary thin arsenic paste usually employed. The following formula, which has been repeatedly recommended, would serve the same purpose:

℞ Acidi arseniosi
Cocaini hydrochlorat. aa. 0,5
Acidi carbolici q. s.,
ut fiat pasta mollis.

Personally, he always uses the fresh crystals of cocaine.

Now comes a very important part of the operation, that of retaining the application in position. The use of cotton and sandarac for retaining applications to the pulp appears to be utterly inexcusable. One would be justified in calling it not only irra-

tional, but slovenly practice. More or less pressure is absolutely necessary to make the cotton stay in place, and this is sure to increase the probability of pain in a high degree, to say nothing of the danger of causing minute quantities of the arsenic to exude and come into contact with the gums, while the cotton itself, unless packed very tight, soon becomes permeated with the secretions of the mouth.

Use the preparation known as Fletcher's artificial dentine; preparations of a similar character may be on the American market. Mix the preparation moderately thin, so that when it is taken upon the spatula it hangs down slightly. It should not, however, be thin enough to drop off. For inserting it, use in most cases a very thin, sickle-shaped spatula. Taking a small quantity upon the end of the spatula, draw it across the margin of the cavity, just about as one draws a plaster knife across the edge of a board to wipe the plaster off. Thereby fix the cotton on one margin; then, in the same manner, it is covered on the opposite margin, eventually a third or fourth portion being necessary to complete the operation. For approximal cavities in molars, an instrument bent upon its surface will sometimes be found preferable to a sickle-shaped one. The method of applying the cement is also somewhat different for molars, but a little experience will soon make the manner of manipulation apparent to every one.

IMPROVED GUTTA-PERCHA FILLINGS.

DR. W. STORER HOW.

Dental Cosmos, April.

Notwithstanding the fact that gutta-percha compositions have been many years in general use by dentists for filling caried teeth, the disregard of suitable methods of manipulating these materials in common practice is a matter for serious reflection.

At one stage of the operation a prevalent custom is to transfix on a plugger-point a pellet of gutta-percha and hold it over or in the flame of the annealing lamp until the pellet is guessed to be sufficiently softened for use. The frequent result is a more or less burned pellet and a consequently imperfect filling. Yet such is the inherent excellence of the thus abused plastic material that the

tooth will probably be preserved long enough to encourage the reckless operator in a continuance of this barbaric process. The fact is that, when properly placed, a gutta-percha filling is not only permanently protective of its territory in the tooth under ordinary circumstances, but is the most comfortable and compatible material for the purpose that has thus far been employed by the profession.

With the object, therefore, of directing renewed attention to the subject from a strictly scientific and utilitarian point of view, and at the risk of saying some things which are already well known, though but seldom put in practice, the present paper has been prepared.

Certain classes of cavities, especially those of a compound coronal character, are excluded from this consideration as requiring material more capable of resisting the forces of mastication than is gutta-percha in most of its compounds. A recent preparation,

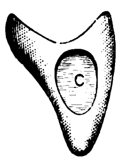


FIG. 1.

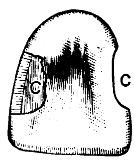


FIG. 2.

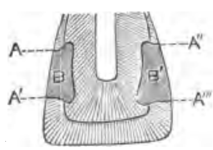


FIG. 3.

however, possesses a density and toughness which admit of employment in the coronal cavities of deciduous molars and such permanent molars and bicuspids as are not subject to hard usage.

Leaving out of view the excepted classes, most other dental cavities may be well, and in many cases permanently, filled with a good gutta-percha compound. The composite character of all the gutta-perchas designed for dental uses is of course inferred by the term gutta-percha as herein descriptively employed, and the peculiar working properties of the material make it imperative that the preparation of cavities to receive it shall proceed upon lines directly related to those properties.

Many approximal cavities like *C*, Figs. 1, 2, may well be filled with gutta-percha, and such as *C*, Fig. 2, where a gold filling would show through the thin enamel front, can better be filled with suitable gutta-percha. The section, Fig. 3, shows the angles *A*, *A'*, which should be given the enamel-edges when practicable, and in

any case the enamel-margin should have a squarely defined angle at its surface border.

Cervico-labial or buccal cavities, as shown in Figs. 4, 5, 6, 7, 8, admit of permanent gutta-percha fillings. Of course due attention must be given to the retention of the fillings by enlarging the interior walls of the cavities when they have not already such expansions. After suitably preparing the cavity, it should be made as dry as possible and so kept. The problem of conveniently and properly softening pellets of gutta-percha has been solved by the production of the thermoscopic heater, shown in Fig. 9, which approximates the exact size of the device. The heater is in this instance made of steatite, because of its heat-retaining property and the desirable physical qualities of its surface. The handle is of wood, at the opposite end from which, in the center of the circular recess, is a small disk (*A*) of metal, fusible at about 212° F. On the heater near the metal a suitable number of gutta-percha

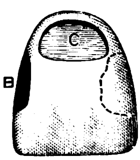


FIG. 4.

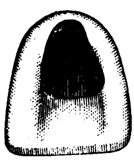


FIG. 5.

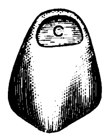


FIG. 6.

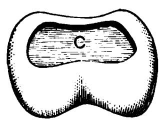


FIG 7.

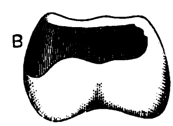


FIG. 8.

pellets, as 1, 1, are placed, and the heater held over the flame of the annealing lamp or burner (as in the illustration) until the fusible metal melts, when the heater is placed on a piece of cardboard (or an empty foil book), and the gutta-percha will be found to be properly softened. The steatite plaque retains the heat long enough for an ordinary operation, but if the metal meantime loses its fluidity and so indicates a lowering of the standard heat, it may be quickly restored by a moment's holding of the heater over the flame, which will again fuse the metal.

The dental gutta-perchas vary considerably in the temperatures of their softening points, and hence their degrees of plasticity at the boiling point of water will be notably different. The absence until now of a practically available thermoscopic standard of temperature has precluded the attainment of anything like uniformity of practice or unanimity of opinion regarding the proper plasticity for obtaining the best results. There is little doubt, however, that

the gutta-perchas have been of the "low-heat" sort, and have been generally overheated in use. The common phrase, "sticky," is indicative of the usual desire that the material should be so softened as to "stick" to the cavity-walls; whereas, such sticky stuff had either an adventitious substance to render it very soft at a low heat, or, if made of good stock, must have been injured by a heat high enough to make it "sticky."

The heater shown at Fig. 9 admits of a ready graduation of temperature to suit each of the various gutta-perchas at present in use. When the flame is applied directly under the metal, as in the illustration, the material placed at 1 will, when the metal is seen to be fused, be at the heat of near 208° F., while the pellets at 2 will be heated to about 200°; those at 3 and 4 to near 194° and 180° respectively. Of course the location of the heat-source will produce

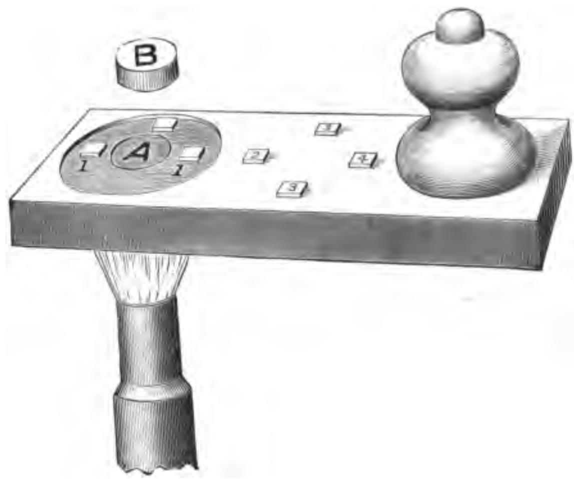


Fig. 9.

corresponding variations in the relative temperatures of the materials as severally situated; but with a visibly definite standard, such as the metal *A*, having a known fusing point, the desired degree of heat may be repeatedly produced at any place on the receiving surface of the heater. A few seconds continuance of the heater over the flame, after the metal has melted, will raise the surface heat to 212° or 215°, as the case may be; but as a suitable indicator for a high-heat stopping, a button (*B*) of metal fusing at 230° is provided as a substitute for *A*, which is first melted and poured out on

a piece of clean paper, the heater cavity being undercut so that when cold the metal cannot be shaken out. The boiling of a few drops of water in the heater cavity will likewise serve to indicate the proper temperature, but the fusible metal is in every way preferable. When the metal becomes fluid, the heater is set on a piece of paper at a convenient place on the bracket-table, and the gutta-percha is found to be softened ready for use. The preferable procedure is to hold the heater over the flame until the metal melts, set down the heater, blow hot air into the previously prepared and dry cavity until the tooth is sensibly warm, hold the heater again over the flame to melt the metal and then, with a suitable broad and cold instrument, pick from the heater a pellet or group of pellets sufficient to a little more than fill the cavity, and by a quick, firm, rocking pressure force the mass into the cavity as if it were sought to take an impression of the same. Then dip the instrument into ice water, wipe dry and hold it firmly against the filling for one or more minutes, after which, with a keen-edged thin blade, pare off the surplus, cutting from the center obliquely toward the margin, taking great care that the filling *B* shall be flush with the cavity-margin at every point.

Access to approximal cavities, as *C*, *C*, Figs. 1 and 2 will seldom permit the instantaneous mass-method just described, but in many such cases a warm, broad, flat blade, as stiff as the space will admit, can, by repeated quick pressures, be made to squeeze the soft mass into the cavity of the warmed tooth, and be instantly followed by a very thin strip of metal held tightly in both hands and wrapped with hard pressure over the filling around that side of the tooth, to both condense and contour the plastic and produce the closest adaptation of the material to all parts of the cavity-walls.

There is good reason for the belief that the common mode of successively introducing small pieces of imperfectly softened gutta-percha into a comparatively cold cavity, and employing instrument points more or less heated for packing the cooled plastic against one side of the cavity after the other, must, in the nature of the case, result in a leaky filling, such as gutta-percha is commonly said to make, whereas the defect is due not to the material, but to its inconsiderate manipulator.

In the case of a very thin enamel front, like that of Fig. 2, that part of the cavity *C* may be varnished with thin chloro-percha

and dried with hot air just prior to filling it as before said. It might first be thinly coated with a tinted oxyphosphate or oxychloride of zinc, which should be given ample time to harden before placing the gutta-percha. Indeed, it is a fundamental feature of good gutta-percha work that, while one cannot operate too rapidly when the plastic is at its proper temperature, the preparatory and completing processes should be given as much time, care, and close scrutiny as more elaborate and often less enduring gold operations. There is furthermore room for the exercise of the artistic faculty in having at hand chloro-percha or cellulose varnish of varied colors, with which, by means of a small brush, a gutta-percha filling as *B*, 4, and one in the like cavity *C*, may be given an inconspicuous shade, and the painting be renewed from time to time, if that be necessary by reason of wear.

A more elaborate heater than that shown is contemplated, but the present device is submitted in the hope that its simplicity and effectiveness will induce a general adoption of improved methods in the manipulation of one of the very best dental preservatives within the ready reach of the profession.

It is obvious that the heater may be placed upon the shield of the annealing lamp instead of holding it by the handle, which will serve for its ready removal when the metal melts. It may likewise be placed on the ring or receiver of Dr. Flagg's heater, and be swung away from the flame when the proper heat shall be thermoscopically indicated; or the flame and receiver may be so adjusted as to continuously keep the heat at the melting-point of the metal in the heater, on which the instrument-points may also be heated as usual.

It will doubtless be remarked by some hasty operator that there is the loss of a full minute's time by the hand-holding of the heater over the flame; but therein consists the excellence of the device, inasmuch as this process of gradually raising the temperature of the gutta-percha to the point of proper plasticity without impairment or disintegration of its singularly susceptible structure and the stopping of the heat action on the instant of the indication of the heat limit demands the attention of the operator (or his assistant), and well rewards him for taking time to conduct the process with due regard to the peculiar properties of the material and to his duty as a presumably proficient practitioner.

By this means it is furthermore practicable to employ a recently prepared gutta-percha, which properly softens at the temperature of 225° F., and requires a warmed broad instrument for its insertion by the mass method described.

If the floor of the cavity closely approximates the pulp, it should first be protected by a layer of cement or low-heat gutta-percha, and the high-heat material be superimposed. In large cavities with frail walls, one or other of those methods is also preferable, but the new material is so dense and hard that in cases where the walls are strong it may be used, even when required to resist some masticatory action. The high-heat gutta-percha is especially adaptable for filling the large cavities in pulpless teeth which are to be put on probation to determine whether or not the root-fillings are efficient in maintaining the teeth in a comfortable condition. It is also hard enough to form a firm base for an inlay of metal or porcelain. In the latter case the porcelain can be ground flush, and the thin marginal septum of gutta-percha be picked out with a thin excavator and replaced with gold foil or mat gold, taking care to remove the gutta-percha in sections on opposite sides of the inlay, and to fill in with mat gold before the successive sections are removed.

In all the foregoing instances the continued dryness of the work until completed is predicated, but of course in the exigencies of practice there are many cases where dryness of the cavity can with difficulty be obtained, or maintained for but a few minutes at a time, and for most of these the instantaneous method of insertion is very well adapted, leaving the paring process to follow the unavoidable influx of moisture.

The heater will be found useful in setting artificial crowns, inlays, and metal facings or caps, which may be placed on it and so brought to the precise temperature of the softened gutta-percha with which they are to be mounted. In fact, it will be advantageous to thus warm a crown or bridge prior to setting it with cement.

It will certainly prove worth while for most practitioners to revise their views of the value of gutta-percha, as it is beyond question in many cases a permanent filling-material when manipulated in accordance with a scientific appreciation of its working properties and special adaptation to the frequent requirements of all thoroughgoing members of the profession.

THE INTERPROXIMATE SPACE.

DR. G. V. BLACK.

Dental Review, June.

The author sets forth the following propositions with reference to this subject and argues strongly and philosophically in support of them:

A healthy gum septum of good form, or filling the interproximate space, is necessary to the cleanliness of the space.

An interproximate space not filled by the gum septum, and of such form as to retain food debris, serves as a pocket for the accumulation and decomposition of such debris, with the formation of acid products, which cause the beginning or recurrence of decay of the teeth.

An unhealthy gum septum and an unclean space are a constant menace to the health of the peridental membranes, and a frequent starting point of disease of a serious character.

Proximate fillings must be so formed, and finished, as to produce a proximate contact that will not hold food debris in its grasp, nor leak the same into the interproximate space during mastication, and thus injure or destroy the gum septum. Thus will be maintained, with the greatest certainty, the health of the teeth, the gum septum, and the peridental membranes.

The full width and proper form of the interproximate space must be maintained so that the gum septum shall have sufficient room to maintain its health and perform its functions. Bad forms of the interproximate space should be improved when treating proximate surfaces.

When the interproximate space has been lost, or its width diminished, by previous loss of the contact points of the teeth from caries, which has allowed the teeth to drop together, the space must be regained by judicious wedging, and the fillings so formed and finished that the width of the space shall be maintained.

The gum septum must not be seriously injured by the use of wedges in separating the teeth, by temporary fillings crowded against the gums while treating pulp cases, nor by the improper use of instruments in finishing fillings.

ANCHORING AND CONTOURING FILLINGS.

DR. G. H. CUSHING.

Dental Review, June.

It may be laid down as the absolute rule that the contour of all fillings which will be subjected to great strain should be such as to most fully protect them from any force of impact that would tend to dislodge them or to drive them away from the walls of the cavity.

This rule, of course, only applies after the restoration of such natural contour as may be essential for hygienic or æsthetic reasons, and may be more profitably followed in the case of proximal and crown surfaces in molars and bicuspids.

In these cases, where the decay extends below the point of natural contact of the proximal sides, it is essential to reproduce the natural contour, to such an extent that the fillings may, when finished, touch again at the same point. This is necessary in order to preserve the interproximal space toward the necks of the teeth and also to prevent food from crowding between the teeth and upon the gums, where it sometimes causes serious disturbance. Beyond this point a restoration of natural contour is rarely if ever to be tolerated.

From the point at which restoration of the natural contour on the proximal sides ceases to be essential up to the termination of the filling in the crown, the surface should gradually slope, or, to reverse the statement, the surface of the filling should slope downward from its most remote edge, either mesially or distally, as the case may be, to the point at which it is desirable to commence the restoration of the original contour on the proximal surfaces.

The anchorage of such fillings should be made as strong as possible without weakening the tooth. There should be if possible a strong square base at the cervical portion of the tooth, a firm seat—that shall be at a right angle with a perpendicular line drawn on the proximal surface, and the walls should be made as nearly parallel as possible.

Unless the walls are extremely thick and the dentine very firm it is better not to make any undercuts or grooves, but to rely entirely upon the proper seat and thorough anchorage in the crown. If they are thin or the dentine of poor quality grooves and under-

cuts must not be made. If the square seat cannot be obtained, as large retaining pits should be drilled as can be done without endangering the pulp. Of course this is only a general rule and subject to such modifications as the peculiarity of individual cases may render necessary.

Where such shapes as have been described are given to fillings of this character the force of impact tends to slide over the surface and not to drive the filling away from its seat.

If on the contrary the filling is built up so that its grinding surface presents a horizontal plane, even the force of mastication will tend constantly to drive it outward from the center of the tooth. If the restoration of the original contour is carried still further and the marginal ridge is raised in the normal form, the strain upon the filling will be much greater and its value correspondingly impaired.

In many cases, where the cusps of the natural teeth which antagonize the gold filling are very long, it is necessary to grind them off, as well as to shape the surfaces of the fillings as above described. Without thus grinding off the cusps, it would in some instances be impossible to get sufficient thickness of gold to insure any stability of the filling.

COVERING ARSENICAL APPLICATIONS WITH SANDARAC VARNISH AND COTTON.

DR. W. MITCHELL.

Dental Practitioner and Advertiser, October.

Having previously selected the instruments and materials required, prepare the cavity and expose as much of the pulp as circumstances will permit. If an approximal cavity is the means of ingress to the pulp, take a small pledget of cotton saturated with carbolic acid, and apply to the gum between the teeth, to secure a non-absorptive surface, as a precautionary measure in case of any possible dislodgment of the dressing by the patient, a thing practically impossible if the dressing is properly made. Then take a pledget of cotton sufficient to make a roll large enough to fill the cervical space and extend a slight distance into the cavity, saturate

this with sandarac varnish, not too fluid, express the surplus between the folds of a napkin by a rolling motion between thumb and finger, thus shaping the pledget for the place it is to occupy. Press this well between the teeth and against the gum across the cavity. Now make the arsenical application, covering it with a metal cap, which can be previously prepared from taggers' tin by using small contour pliers. Finally cover with another pledget of cotton prepared like the previous one, and seal the cavity. The space under the metal cap will leave room for a slight effusion, should any take place, and thereby prevent the pain that might ensue from pressure from this cause, which is not at all unlikely, where cotton is left next to the application. It is quite essential that everything about the tooth operated upon should be quite dry.

TO PROTECT THE PULP AGAINST CEMENT FILLINGS.

DR. I. DOUGLASS.

Dental Register, January.

Says touch with a thin solution of gutta-percha in chloroform; over this lay a piece of No. 8 tin foil, or a flattened pellet of gold. Then put in the oxyphosphate.

CLEANING AND CARE OF THE TEETH.

DR. CHAS. E. FRANCIS.

International Dental Journal, October.

Perhaps my method of cleansing is much the same as adopted by many, yet it may not be out of order to briefly state it. Provided with sickles and scalers of various shapes and sizes, commence by removing the most prominent scales of what is usually denominated, or misnamed "tartar." The patient is supplied with plenty of tepid water for rinsing the mouth at frequent intervals. On the bracket table is a glass slab, on one end of which is a small quantity of powdered pumice-stone and borax, of equal parts, mixed. On the other end of the slab are several pellets of cotton about the

size of a pea, and compactly rolled. A towel is pinned about the patient's neck to prevent the clothing from getting soiled when rinsing the mouth, or from the powder, should any fall from the brush. With tweezers, or gold-carrier, pick up a pellet of cotton and saturate it with compound tincture of iodine. With this, paint the surfaces of the teeth, three or four at a time, commencing with the incisors, and at the same time, with the fingers of the left hand, keep the lips from coming in direct contact with this application. Then with a small brush, fixed in the engine and loaded with the powder, briskly brush away the stains. Sometimes the engine brushes are rather stiff at first to work well on the broad surfaces of the superior incisors, but they lose much of their rigidity if pressed a few times against the narrower surfaces of the lower incisors. The brush is passed along from tooth to tooth, but frequently removed that the mouth may be rinsed. This process is continued until the stains entirely disappear.

After finishing with the brushes, a moose-hide buff is fixed in the engine, with which go over the teeth to give an extra polish to all surfaces it can be made to reach; and call into service, also, wedge-shaped bits of wood, floss-silk, or wood-fibre, to work between them. Then, with a mouth syringe, force tepid water through the dental interstices to clear away the debris. After this washing, a careful search is made for such stray atoms of calculus as may hitherto have escaped observation; and when no more can be found, take a finely-pointed syringe filled with listerine and inject a small quantity between the teeth all around. Where the gums are congested, iodide of zinc may afterwards be applied. It is sometimes advisable for the patient to undergo a second operation; and where socket disease exists, additional and frequent after-treatment is requisite.

The employment of tincture of iodine greatly facilitates the operation of cleansing, and especially is this the case with children's teeth. It has a wonderful and almost instantaneous effect on the dark stains, combining with the latter, which are rendered so soft as to become easily removed. It also clearly defines the lines of concreted mucus, and enables the operator to readily ascertain if any traces remain undisturbed. It should be applied a number of times during the operation, or until the teeth appear quite clean.

Now comes the important question, "How can teeth which we

have so carefully treated be kept in the condition we left them?" or, "How can habits of thorough, systematic cleansing be imparted and so impressively taught that instructions may be faithfully carried out or practically demonstrated?" This is a matter that gives much trouble and anxiety.

Observation teaches that patients are apt to become interested when we take the trouble to explain to them causes and effects; so, during the operation, at convenient intervals, give them a brief lecture on dental hygiene. In as concise a manner as possible, explain the causes of decalcification and of socket disease, and picture the dire consequences of carelessness and neglect; also tell them how they may lessen the chances of such troubles and secure to themselves sound teeth and healthy gums. Patients need be taught how to manipulate the tooth-brush, and at what times they can use it to best advantage. Advise them to brush their teeth both at night and in the morning, but to be particularly thorough in doing this just before retiring at night. Remind them of the fact that between the last or evening meal and the morning repast there intervenes a lapse of about twelve hours, and during most of this time the mouth is comparatively at rest. In the meantime, all particles of food collected about the teeth or filling their interstices are undergoing a process of fermentation.

Advise patients to select brushes small enough to go well into the mouth and reach every possible part of every tooth. Brushes with serrated surfaces will better force the food from between the teeth than will flat-faced ones. The bristles should be stiff enough to be elastic, but not too rigid nor too compactly crowded together; otherwise they will simply glide over the surfaces without entering the interstices. On the other hand, very soft brushes, as of badger or rabbit hair, are inefficient and of little value. They possess no elasticity, and come in contact with but little of the surface of each tooth, leaving untouched such places as most need brushing. The same objection will apply to the use of the so-called felt brushes.

In manipulating the brush it is well to adopt some sort of system, and not permit a few of the teeth to receive more than their share of attention, while others get little or none. Commence, for instance, with the very back teeth, and work gradually forward towards the centrals; then, with a somewhat quick movement of the wrist, give the brush an occasional semi-rotary motion in a

direction from the gums. After finishing with one side, treat the other side in the same manner. A suitable dentifrice is essential, which may be improved if the brush is passed across a cake of Castile soap before it receives the powder. On laying aside the brush the mouth should be thoroughly rinsed with water; and finally, some antiseptic agent, like listerine, slightly diluted, if allowed to flow around the teeth, will prove beneficial. Such are the instructions given to my patients.

The author omitted one valuable point in his advice to patients; that is the use of linen or silk floss between the teeth after each meal. The floss should be waxed. Embroidery silk on small spools, to be had of any dry goods store at one cent per spool, is an excellent article.—ED. COMPENDIUM.

Dr. Clapp suggests instead of the iodine, a mixture of iodine and glycerine, equal parts; to one ounce of this mixture add ten drops of carbolic acid (deliquesced crystals). Says he doesn't know that this will act quite as readily on the green stains as the plain tincture of iodine, but it is much less disagreeable to the patient, and it will act nearly as well. He says it is also remarkably adapted for congested and inflamed gums, and it is almost a specific for cracked lips.

Dr. Meriam prefers rattan sharpened to points for carrying the powder, and for final polishing he uses elder pith with oxide of tin. Elder pith can be had of jewelers.

GLASS BEADS FOR BURNISHING.

Dental Review, June.

Dr. Bogue uses glass beads mounted on engine mandrels for burnishing.

AID TO FILLING CERVICAL CAVITIES.

DR. I. DOUGLASS.

Dental Register, January.

Take a piece of hard wood, shape it like a wood-carver's gouge, only let each corner project that it may pass in more or less

between the teeth, fitting it to the position on the tooth. Before applying the dam saturate a thin piece of spunk with a 20 per cent. solution of cocaine and lay it on the gums for five or ten minutes; do not have too much of the solution lest it mix with the saliva. Apply the rubber dam; also the ligature; tie loosely for the present. Pull the rubber and ligature knot downward in front of the tooth so as to expose the entire cavity and margin of the gums above the rubber. Place the stick in position and hold the rubber below the cavity firmly; let loose the rubber, and with a thin instrument carefully work the rubber to its place. In this an assistant may be of great service by tightening the ligature gently while holding the stick firmly in place with the left hand.

COPPER POINTS FOR ROOT FILLING.

Copper points in connection with chloro-percha for filling root canals back of the second bicuspids, is becoming quite a popular practice. It is claimed by some writers that the salts of copper formed in the canals has therapeutic effects on the tooth structure.

TO REMOVE BROKEN INSTRUMENTS FROM ROOT CANALS.

DR. T. P. WILLIAMS.

Pump into the canal eucalyptus oil, which so softens the walls of the canal that the instrument can be easily removed.

DR. H. R. NEEPER

Says one way to remove them is to cut beside them for a little distance up the root with a very small wheel bur, being careful not to touch the broken instrument; make a few pull cuts against the instrument and remove it.

I have several times removed broken instruments from the canals of the upper front teeth, by drilling around them with a drill made from a broken bur by grinding it v-shape.—EDITOR COMPENDIUM.

TO MAKE TIGHT GUTTA-PERCHA FILLINGS.

DR. J. G. TEMPLETON.

Dry the cavity well, place in it a pellet of cotton saturated with absolute alcohol, remove the cotton and with a warm air syringe evaporate the alcohol, varnish the cavity with a solution of common rosin in chloroform, warm the gutta-percha and pack with cold instruments, heat a thin-bladed instrument and pare off the surplus filling.

NITRATE OF SILVER FOR CARIES.

To Dr. J. E. Stebbins, credit must be given for bringing this valuable agent prominently before the profession for arresting caries and destroying sensitiveness of abraded surfaces. It is particularly useful in children's teeth. He uses the crystals powdered in a mortar, into which a moistened, pointed stick is dipped and applied to the surface of the tooth intended to be acted upon. Caries in children's teeth treated in this way have withstood the ravages of further decay for years.

ANNEALING GOLD.

Dental Cosmos, October.

Dr. E. C. Kirk strongly argues against annealing gold over a gas bunsen burner. The traces of sulphur in the flame will act very injuriously to the metal. An alcohol lamp he prefers to any other heat.

FOR SENSITIVE DENTINE.

DR. T. M. ALLEN.

Items of Interest, May.

Adjust the dam, dry the cavity and apply spirits of ammonia. Do not apply it near the pulp or allow it to get on the soft tissues.

TO FORCE MEDICAMENTS THROUGH ROOTS.

DR. J. N. CROUSE.

Dental Review, April

After preparing the cavity, getting it dry with the use of the dam, take a piece of soft India rubber—as near the shape of the cavity as possible—perhaps a little larger—then fill the cavity with medicine, and with the rubber and a blunt instrument, force the medicine through the fistula.

VASELINE FOR DISKS.

Dental Review, May.

To prevent paper disks from catching the dam, and to protect them from moisture, moisten them with vaseline.

REMOVING GUM TISSUE FROM UNERUPTED THIRD MOLARS.

Dental Review, December.

Dr. T. L. Gilmer uses, with great satisfaction, the electric cautery, by forming the electrode into a shape to remove at one application the desired quantity of tissue. Cocaine is first applied.

AMALGAM MASTICATORS.

Dr. J. W. Clowes will take, say, two badly broken down bicuspids or molars, get them in healthy condition, seal the ends of the roots, place in them some soft amalgam, plant a post in each with a bar across, and build up a good masticator with amalgam, which extends across the space and rests on the gum.

TREATING FISTULOUS ALVEOLAR ABSCESS.

DR. W. MITCHELL.

Dental Review, November.

Cleanse the root as thoroughly as possible and fill as usual. The treatment of the sinus is by the insertion of a gutta-percha point, pink preferred, dipped in oil of eucalyptus, and of sufficient size and length to well distend the opening and reach to the seat of trouble, by leaving the point in situ; a few days will suffice to effect a cure. As granulation proceeds the protruding end may be cut off by the patient, or a shorter one inserted.

GUTTA-PERCHA FOR ROOT FILLING.

International Dental Journal, March.

Dr. Briggs says pure gutta-percha to be obtained of rubber tores, is far preferable for making the chloroform solution for roots filling to the ordinary base plate preparation.

TO RELIEVE SENSITIVENESS WHILE GRINDING NATURAL TEETH.

Add alcohol to the water used. This will also cause the wheel to cut faster.

TO FORM A MATRIX WHERE ADJOINING TOOTH IS MISSING.

DR. D. V. BEACOCK.

Dominion Dental Journal, March.

If a cavity is to be filled where the adjoining tooth is missing, fill in the missing space with modelling compound or gutta-percha, causing it to press the metal matrix close to the cavity.

A good way is to fill the space with the material first, then warm the metal piece to be used as a matrix and press it between the tooth and the composition.—ED. COMPENDIUM.

SOAPING SAND-PAPER DISKS.

Items of Interest, June.

Dr. G. M. Merritt says, before using the disks for separating or for finishing a filling, run both sides against a piece of hard soap. Sand-paper and emery strips treated in the same way are much benefitted.

THE FIXATION OF DENTAL MATRICES AND THE PACKING OF GOLD AT THE CERVICAL PORTION OF THE CAVITIES.

DR. LOUIS JACK.

International Dental Journal, August.

The consideration of these important features connected with the use of dental matrices is entertained for the reason that the difficulties which have usually been encountered have generally pertained to these two procedures.

The general purposes of the matrix are to make less difficult the formation of the proper contour of proximate surfaces, to effect the placement of the gold in exact adaptation to the cervical wall with sufficient solidity, and to secure these ends without injury to the structure of the teeth.

This appliance greatly facilitates the packing of cavities on the distal proximate surfaces of molars and bicuspids, for which surface it is more especially intended as being particularly well adapted to these positions.

With the increased deftness which grows out of experience with this aid, it becomes frequently an important assistance to the performance of many mesial proximate cavities.

It is not necessary to dwell upon the details of the preparation of the carious cavity. Let it suffice to state that when the cavity is situated on the distal proximate surface of the molars, the opening of the orifice should include a large portion of the masticating plate of enamel; that the walls should be undercut at the inner and outer margins, so far as may be done without weakening the strength of the borders; that it is not necessary the undercutting

should extend entirely to the cervical margin; that the cervical wall should be transverse to the axis of the tooth and be formed without undercuts or retaining pits; that the margins at all points should be countersunk, but to a much less degree at the cervix than at the lateral margins. It is also important the margins of the cavity be polished to facilitate the movement of the gold by the removal of the friction. When the cavities are situated nearer the front of the mouth, the removal of the masticating wall becomes only so far necessary as to facilitate the introduction of the gold and to eliminate so much of this plate as may be subject to impairment by the force of mastication.

For the ordinary cases of teeth which are not impaired by fracture or by the loss of structure by previous extensive cutting, the forms of matrices which I use are the depressed and those of plane surfaces bent and formed to meet the exigencies of the case in hand.

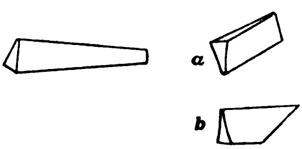


FIG. 1.

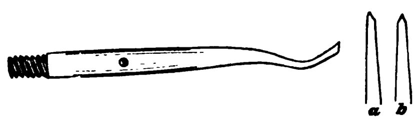


FIG. 2.

Where the depressed form is used the depression should correspond in size to the dimensions of the cavity, and its edge should extend a short distance above the cervical margin. This form of matrix is better adapted when the margins of the cavity have been so far weakened by carious action as to necessitate trimming away a portion of the buccal wall, and where for reasons beyond control the teeth are considerably separated.

The plain matrix is better adapted when the separation between the teeth is slight. It should be stated that in all cases it is necessary for the securement of correct results that the preliminary step in each case should be the separation of the teeth by pressure; this is to enable the parts to be properly finished, and to have the gold of the one tooth come into contact with the gold of the adjoining tooth at the natural points of contact of the proximate surfaces of the teeth. These preliminaries enable the consideration to be made of the fixation of the selected matrix.

The important requirements concerning this procedure are that

the matrix shall be in contact with the cervical surface of the tooth as nearly throughout that margin as it is possible to have it; that the matrix shall be in contact with the lingual margin of the cavity, and be in near contact with the palatal margin below the cervical portion. This feature of the fixation of the dental matrix is at some difference with the views of some others concerning this point, but I hold that to impact the gold by the percussive force necessary to produce contact and solidity at the cervical border the line of junction should be a close one. This hypothesis has been borne out by considerable experience with the two conditions of proximity and apparent contact. The securement of contact at these two points of the margin is attained by the peculiar form of the wedges to be used. The one for the cervical border is a double wedge. The sectional dimensions depend upon the space at the cervix and somewhat upon the general area of the cavity, aud its length upon the lateral size of the tooth. This wedge, after being dipped in sandarac varnish of the consistency of syrup, (any excess of the varnish being removed), is forced into the space by pressure. If of proper size it should appear at the inner margin, and extend beyond the outer surface far enough to allow a grasp to be made for the removal. The wedge for the palatal margin is also somewhat of double wedged form, but it is not sharp at the point.

At *a* (Fig. 1) the piece appears as a simple double wedge having an even width, but becoming thinner on the back at the end, to be applied at the cervix. At *b* the end is cut in the form presented. It should be of size to correspond to the space between the matrix and the tooth adjacent to the subject of the operation. When the tooth is much rounded the face of the wedge often requires to be hollowed out with a gouge, the better to adapt it to the space. This wedge is varnished, put in place, and forced into position by an instrument pushed against its thick edge at the upper part. The object of the mitre-like form at the end now appears, as this surface corresponds to the line of the cervix. In some cases this end will be apposed against the cervical wedge; in other cases it will pass between the adjacent tooth and the cervical wedge. In either case it makes this portion of the matrix secure and permits the contour to be effected.

It may appear a small matter to dwell with so much detail upon so apparently trifling a matter as a wedge for this purpose, and yet

it is upon the absence of definite knowledge of a correctly mechanical fixation of the matrix that has prevented many operators from securing the great benefits which are to be found in the employment of matrices. It is, I believe, the absence of the thoughtful application of these simple means which has led to the invention of complicated and, I believe, less effective methods for fixation. It will be perceived by the accompanying casts the adaptation of this method to which attention is directed.

THE FILLING OF THE CERVICAL PORTION.

The chief elements connected with this feature of the subject concern the character of the gold, the form of the pieces of gold, the form of the instruments best adapted, and the method of applying the instruments. Each of these considerations is important, and a disregard of the qualifications of the filling material or of any of the essential procedures may defeat the ends to be secured by this system of filling cavities.

The gold to be employed for the upper half at least of the space should be non-cohesive and soft; that is, it should be incapable of being rendered cohesive by heat, and should remain soft and lead-like during the manipulation to which it is subjected. The gold I have found to fulfill this requirement more nearly than any others which I have used is the so-called soft gold of Morgan & Hastings. The soft gold of Abbey & Sons is also well adapted, but each one should make his own tests of the quality in this respect of the gold to be used.

The reason that gold of a cohesive nature should not be employed is that the portion in immediate or close relation to the instrument may become consolidated and bridge before the point in such a manner as not to permit the force to be expended to the ultimate portion of each piece of gold which is being molded into position and undergoing consolidation.

THE FORM OF THE PIECES.

That form which will be found best adapted in the larger cavities is produced by folding a tape into a block. The tape is formed by folding from one-third to a whole sheet of No. 4 or No. 5 three times, thus producing a tape of eight layers. The division of the sheet is dependent upon the dimensions of the space and somewhat by the strength of the walls. The folding of the tape into

blocks is also, as to form and number of turns made, dependent again upon the size of the cavity. These variations can only be learned by the study and experiment which each one should make for his own guidance, and for which no theoretic rule can be defined.

THE FORM OF THE INSTRUMENTS.

It is obvious the shape of the plugging instruments to be used in this system of stopping cavities must be different from those which are applicable to the ordinary methods. The bends of the shank should be such that the points may reach all parts of the cavity, and the form of the ultimate point is required to be that which will be best calculated to produce adaptation and solidity of the gold at the lines of apposition of the matrix and the walls of the cavity, and also should be so shaped that by slight rotation of the instrument on its axis the point may reach into the retaining grooves, to carry on the consolidation of the gold at this point.

Fig. 2 represents the shape which I have found to be more nearly universal for this purpose than any others, and, as will be seen, differs only in the form of the ultimate point first described and published as a matrix plugger.

It will be observed the ultimate point is not flat and transverse to the axis, but that it is ovoid and slightly bevelled to give the extreme edge a little to one side. This necessitates the points to be in pairs, but for the general packing the points are transverse laterally and slightly ovoid. In the use of the instruments the edge is held at an angle to the marginal line, to prevent the point being driven between the matrix and the margin of the cavity; by this caution and slight tilting movements deft use of the instrument is quickly acquired.

When these are made of several sizes and of slightly varying bends they will meet the requirements of any case which may occur. The serrations are made very fine, and are necessary only to inhibit the instrument cutting the foil and to maintain a frosted surface, which prevents too easy sliding of the gold.

THE PACKING OF THE CERVICAL PART OF THE SPACE.

The chief ends in view in the use of matrices are the facilitation of the procedure of packing the gold and the perfect adaptation of the gold to the cervical wall. The difficulties attending the adaptation of gold-foil to the cervical walls of distal cavities, as

applied in the ordinary methods, are caused partly by the posterior position, and partly by the physical tendency of gold to draw away from the margins during the packing process. This tendency pertains to all forms and kinds of gold used. When the cases are upon accessible surfaces this disposition is overcome by leverage movements of the filling instruments, and by the employment of foot points. On the distal surfaces, when the spaces are comparatively small, the opportunity for leverage does not exist, and the foot point is not convenient of application.

There is another important advantage this method possesses. When distal cavities are filled by the ordinary plans, it is necessary either to produce deep retaining grooves near the cervical region or to make retaining pits at this part. Each of these have serious objections; the first weakens the lateral walls, and the latter impairs the vitality of the adjacent portion of dentine, and also in many instances imperils the safety of the pulp. These deep retaining means are then necessary to insure that degree of securement of the first pieces of gold as to permit the malleting with the foot points to bring about adaptation without causing displacemement of the gold. As before stated, the retention when the matrix is used need not be by undercutting at the upper part of the lateral walls.

When all is in readiness, a block of the gold is seized in the pliers and carried towards either cervical lateral position in such manner as to direct its end toward the countersink.

It is then secured by the use of any suitable plugger which will fix it in position. The opposite aspect of the cavity is treated in the same manner when the special pluggers are used to force by percussion the blocks into adaptation with the margins. A third piece is next adjusted between the two. When this is fixed in position careful adaptation may be effected by going over the whole surface, particular attention being directed to secure contact along the line of junction of the matrix with the walls.

The size of the selected blocks should be such that they will by their dimensions assist by the friction in holding their place. As the gold should be soft and yielding, there will be no impediment by the size unless this should be out of reasonable relation to the dimension of the space to be filled. When the first layer is completed others may be made seriatim until the upper third or half

of the cavity is filled, when the major part of the balance should be completed with cohesive gold. For this part my reliance has been upon No. 20. The amount of force required to effect the consolidation is not great, and as the gold is confined by the limitation of the space it can easily be brought into adaptation. When the automatic plugger can be used, the force of the short blows of this is sufficient. The Bonwill mechanical mallet is also well adapted in its force to effect the consolidation, and is peculiarly well suited to mesial surfaces.

I have in some detail thus described a procedure which, in my own experience and that of others, has proved of great value, not only as a means of effecting good results, but as a measure which facilitates the completion of the most difficult class of operations which we are called upon to perform.

BAND MATRIX.

DR. H. C. MERRIAM.

Where badly decayed molars or bicuspids are to be filled with amalgam, a band of thin steel or German silver is fitted to the tooth and soldered, with the band on, the tooth is filled and band allowed to remain until the filling is hard.

WORKING COPPER AMALGAM.

DR. J. A. OSMUN.

International Dental Journal, July.

The author in writing on "Observations on the use of Copper Amalgam," says he has the best results by heating the amalgam a good deal, and making it as free as possible of mercury, rubbing it thoroughly and packing it hard in dry cavities.

Dr. Bogue says heat it until it sweats mercury, and then work it in the hand or in a mortar, and then let it harden, again heat it until the mercury sweats, then rub it in the mortar, and then squeeze all the mercury through a chamois skin and again let it

harden. Do that three or four times, and then let it harden. The result is a product that is different from any we have.

Dr. Bodecker says by adding a small quantity of silver, its working and saving qualities are greatly enhanced. He manages it this way. The amalgam is heated very carefully and put into the mortar, a little mercury is added, and the amalgam crushed and rubbed thoroughly; then to about eight grains of copper amalgam add one leaf of the fine silver foil to be obtained of any gold beater. The amalgam is introduced with burnishers.

STEEL MATRIX AND PERRY SEPARATOR TO HOLD IT.

International Dental Journal, August.

Drs. Ainsworth and Baker use a thin steel matrix, held in position by Perry's separator.

ALVEOLAR ABSCESS MEDICINALLY TREATED.

DR. W. J. MORRISON.

Dental Headlight, January.

The author urges against too much treatment, and recommends the following:

Use peroxide of hydrogen, apply the rubber dam, turn on a current of hot air (not warm, but hot), pump into the root canals a two per cent. alcoholic solution of bichloride of mercury, dry with hot air again, pack the cavity with pellets of cotton saturated with the above solution, seal with wax, and dismiss the patient for three or four days, according to the severity of the case. Where the case is not of too long standing, a second treatment will, as a rule, effect a cure. In chronic cases with fistula opening the medicinal treatment is the same, except an aqueous solution of 1 to $\frac{1}{1000}$ bichloride of mercury is used as a wash, and dressing the root canals as above.

CHLORO-PERCHA AND EUCALYPTUS

DR. F. G. EDDY.

Ohio Journal Dental Science, July.

The writer mixes with chloro-percha for root filling, equal parts of eucalyptus and oil of cassia.

ENTRANCE TO DISTAL APPROXIMAL CAVITIES IN LOWER MOLARS.

DR. CHAS. HARKER.

Dental Cosmos, November.

Cut away the posterior buccal corner of the tooth as far as the buccal seam, which will render the pulp chamber and root canals of easy access.

TREATING AND FILLING CHILDREN'S TEETH.

DR. J. Y. CRAWFORD.

Southern Dental Journal.

In the treatment of children's teeth, he feels certain that for incipient caries on the proximate surfaces, separating with the Authur corundum disks, or file to that extent that all small cavities are removed so thoroughly that no trace of disease is left. In cases in which the cavities are too deep to admit of removal by the use of the disk, the decay should be reamed out and the cavity filled with some of the various cements, this to be removed as often as necessary to keep the teeth in a good sanitary condition.

In more advanced cases, where there are not only small cavities on the approximate surfaces, but deep-seated decay in the crowns or grinding surfaces, they should be well prepared and filled with some of the preparations as indicated above.

One other class of cases to which he invites attention is a more advanced and complicated type: children patients who present themselves with one or more dead teeth to treat and look after, with or without open sinuses or abscesses. Such cases should

be treated until a cure is effected, filled and ground down with corundum stones, completely non-antagonizing them so that the non-absorption of their roots may be supplemented by the process of exfoliation. A clinical fact we would do well to note is that when an abscess has developed as a result of the death of the pulp in a deciduous tooth, the eruption of the permanent one is accomplished much earlier as a rule than nature intends they should appear.

The author advises against the filling of the temporary teeth with amalgam, on the ground that it retards the absorption of their roots.

GOLD FILLING MADE UNDER SALIVA.

DR. W. H. DWINELL.

International Dental Journal, May.

The author says a cervical filling was being made of mat gold; it became submerged; he added piece after piece of the gold and burnished them down with an engine burnisher of tomato shape. The filling was perfect.

ALCODIFORM IN CAPPING NERVES.

S. M. JOHNSON.

Texas Dental Journal.

If the nerve is very much exposed, apply a ten per cent. solution of muriate of cocaine. Cut away part of the nerve and bleed it freely. After hemorrhage has ceased, cover the nerve with a thin coating of alcodiform. (Iodoform with just enough alcohol to make a thick, creamy mass.) As soon as the alcohol has evaporated, cover this with a thin layer of chloro-percha, and as soon as the chloroform evaporates, flow over the gutta-percha some cement. After this cement hardens, use more cement. After cutting away excess of cement the cavity is ready for permanent filling. The cavity must be kept dry with dam during this process. If you get too much alcodiform on the nerve it can be reduced by touching it

with a piece of bibulous paper saturated with alcohol. When the nerve is very slightly exposed, bleed freely, apply alcodiform, and cover with chloro-percha, leaving off the cement if you fill with an amalgam or any plastic filling.

SHOCK AND COLLAPSE FROM DENTAL OPERATIONS.

DR. JOHN S. MARSHALL.

International Dental Journal, June.

The author in writing, interestingly, on this subject and citing many cases where harm had resulted from long, tedious or painful dental operations, says the following formulæ have proved very helpful in his practice in relieving the pain attendant upon the preparation of sensitive cavities of decay and preventing nervous exhaustion:

Croton chloral hydrate, gr. x;
Bourbon whiskey, ℥i.
Sig.—Twenty minutes before operating.

Morphia sulph., gr. ¼;
Bourbon whiskey, ℥i.
Sig.—Thirty minutes before operating.

Potassium bromide, grs. xx;
Cinnamon water, ℥ii.
Sig.—Thirty minutes before operating.

Potassium bromide, grs. x;
Croton chloral hydrate, grs. x;
Cinnamon water, ℥ii.
Sig.—Thirty minutes before operating.

He says a wise use of these constitutional remedies, supplemented with the local treatment usually employed, give material aid in relieving the suffering and nervous apprehension of the patient. And if coupled with an educated judgment and quick perception as to the general physical and mental conditions of those presenting themselves for dental operations, and the amount of fatigue and nervous irritation that they are likely to endure with

safety, will do much to remove the dangers of such operations, resulting in shock or collapse.

He says we all have doubtless been more or less guilty of compelling our patients—through carelessness or ignorance of the laws governing the vital forces—to endure the fatigue of long and painful operations when they were by reason of their physical or mental condition, or both, unfit to bear them with impunity.

Children especially should not be compelled to submit to the fatigue and nervous strain of such operations, particularly during the period of rapid growth, puberty, and just preceding it, or while engaged in severe study. At these periods the nervous system is usually taxed to its utmost limit of endurance. When crowded beyond this point the health gives way; and often, when too late, it is discovered that the foundation has been laid for a train of nervous affections which persist until the end of life.

OBTUNDING SENSITIVE DENTINE.

DR. E. A. BOGUE.

International Dental Journal, May.

The writer says where the patient is extremely timid, and he wishes to get rid of sensibility, and has no fears of destroying the pulp, he uses a little pure cocaine, or cotton dipped into carbolic acid, and then into powdered cocaine, which destroys the sensation sufficiently to put in a little granulated chloride of zinc. He says in one minute and a half the insensibility, often, is complete.

A METHOD OF MAKING GUTTA-PERCHA FILLINGS.

DR. W. G. BROWNE.

Prepare the cavity, apply rubber dam or napkins, dry out cavity with an absorbent, put in the gutta-percha apply heat with a hot air syringe, which will both soften the material for working it and dry the cavity at the same time.

CEMENT FOR PRESSING THE GUM FROM CAVITY MARGINS.

DR. W. D. MILLER.

Dominion Dental Journal, July.

In wedgeshaped cavities where cotton cannot be made to hold, dry thoroughly and fill with cement mixed rather thick, and when it has begun to harden press upon it with a pledget of cotton. The cement spreads out and forces the gums back at the margin of the cavity.

STEARINE FOR CEMENT FILLINGS.

International Dental Journal, June.

Dr. Bogue says if stearine is flushed over a cement filling it will polish somewhat like enamel.

TO HOLD SORE TEETH WHILE OPERATING ON THEM.

DR. W. D. MILLER.

Dominion Dental Journal, July.

Dry the teeth and gums adjacent; mix some cement, or plaster, and plaster around the tooth. Dr. Gilmer says mold ordinary modeling compound around it and the adjacent teeth, after adjusting the rubber dam.

CAPPING FOR PULPS.

DR. G. C. ANTHONY.

Dissolve sufficient gutta-percha in chloroform to half fill an ounce bottle. Add oil of cloves, 20 minims; tannic acid, 10 grains; carbolic acid, 20 minims. Seal and shake until satisfied there is a thorough mixture of the ingredients. Then open and allow the chloroform to partially evaporate. There will remain a putty like mass, which is always ready for application.

In applying it to pulps, use a piece of asbestos paper, cut to

fit the floor of the cavity, lay it over the exposure, over which some of the mixture has been placed, then cover with oxyphosphate mixed to the consistency of cream. This will aid in carrying off the surplus chloroform. Do not remove any of the decay from over the pulp if not absolutely necessary. Keep the mixture in a glass stoppered bottle.

SEPARATING TEETH BY TYING THE COTTON IN.

DR. J. AUSTIN DUNN.

Dental Review, December.

The idea is simple, but very effective compared with the common use of cotton alone. It consists in placing waxed floss silk between the teeth before packing the cotton into the cavity, then

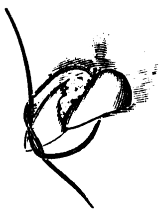


FIG. 1.

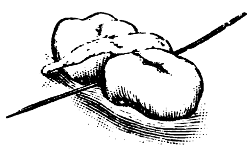


FIG. 2.

drawing the two ends together and tying, as in Figure 1. For the bicuspids and molars, a large white cotton string may be used in connection with a long roll of cotton, quite firmly twisted, packing the ends in at each side (Fig. 2), which, when tied, will form a cotton circle around the contact points of the two teeth, making it impossible, when properly adjusted, for it to move from its position.

Practice and judgment will be necessary in order to gain the best results in all cases. The advantages of the method are: 1. The pressure is positive, moving the teeth in a short time with comparatively little soreness. 2. The danger of the compress slipping from its position and impinging on the gum septum is reduced to a minimum. 3. It causes the least pain and inconvenience to patients.

PULP PROTECTION.

DR. G. F. CHENEY.

Dental Register, September.

Make a thin solution of sandarac in alcohol, rubber-dam adjusted, the cavity properly dried, a small pellet of cotton is dipped in the varnish, conveyed to the cavity touching the bottom and walls. Five or ten minutes should be allowed for hardening, which can be hastened by hot air. In some cases take a piece of tissue paper, dip in the varnish and place over the cavity bottom.

In approximal cavities of the posterior teeth, especially those extending below the gum margin, in close proximity to the pulp, with barely depth enough for anchorage to the filling, nothing else will take the place of varnish. Oxysulphate of zinc is highly recommended for the same purpose.

REMOVING OVERLYING GUM FROM ROOTS.

DR. THEO. F. CHUPEIN.

Dental Office and Laboratory, May.

Where the roots are so covered with gum tissue that they are not seen, and only known to be present by the indications which point to their presence, in some cases snip off the overlying gum with the sharp pointed curved blade scissors. When the gum has ceased to bleed, pack base plate gutta-percha, depending on the teeth being narrower at the necks to hold this in place. At the next visit the root can be distinctly seen, but is not in a condition yet to bend a ferule or band around it. The next procedure is to wrap ligature silk or gilling thread two or three times around the root, and push this down well on the gum around the root and tie firmly, hold it in place by replacing the pink gutta-percha, wedging it, as before, between the adjoining teeth. At the next visit, the root is so clearly marked and the gum so well pushed away from it that there will be not the least difficulty in preparing the root or fitting the ferule accurately, and this without the least wounding of the gum. It may happen that at first the gilling twine cannot be wrapped around the root but once, and at the next visit but twice, but by perseverance in this way, the root can be so thor-

oughly exposed and the gum so well pushed away that it becomes a pleasure to the operator to fit the ferule and no pain to the patient while he is doing this.

SMUDGED GOLD.

DR. W. STORER HOW.

Dental Cosmos, December.

Elaborate building or contour work not infrequently meets with most disappointing disaster, due to the smudging of the gold by the incomplete combustion of the flame-fuel. Yet the real cause of the calamity is unnoticed, and fault found with the gold, or the possible presence of a leak in the dam or other source of moisture suspected, whereas the first thought following the surprising failure should be, "The flame is at fault." Clearly one of the most important preliminaries to a gold operation should be a careful scrutiny of the annealing flame, to be sure beyond a peradventure that there is not a trace of smoke; that the combustion is perfect. The wick of the alcohol lamp is usually too tight in its tube, and not loose enough in its assemblage of fibers to permit a free flow of the fluid fuel. Of course, the appearance of a single glow-point at a fiber-end of the wick is a certain sign of smoke, and should at once be remedied. When a lower grade than 95 per cent. alcohol is used, the residual fluid after a few hours' burning becomes so watery as to lessen combustion, and cause the charring of the wick-end. The sight of a blackened wick-end leaves no doubt as to the probable character of the annealing, and the operative work done by the use of that lamp.

The illuminating gas of diverse cities differs in quality, and even in the same city varies from time to time in its heat and light-giving properties; therefore the ordinary Bunsen burner is liable to vary in its degree of combustion; but the habit of closely observing the flame and keeping it regulated to the blue point of complete combustion, will tend to the avoidance of the risk of smudging, the main thing being to be sure that the burner is a good one. It is well to keep at hand a piece of white porcelain—for instance, a small butter plate—and by occasionally holding it for a minute or

two over the flame, gain an assurance of the entire absence of smoke. When the gas is of a poor quality, the impurities and the gaseous products of their combustion contaminate the gold to a degree incompatible with a perfect welding or cohesion. The mica method of annealing is preferable, as avoiding all risk of a smudge.

NITRATE OF SILVER PRACTICALLY APPLIED.

DR. A. M. HOLMES.

Dental Cosmos, December.

Nitrate of silver is conceded to rank as one of the most efficient and reliable remedies in medicine and surgery, and when its merits are fully known it is believed that it will be found equally efficient in the treatment of a large class of diseases of the teeth.

Take, for instance, decay in temporary teeth. We all know, from individual experience, how trying it often is to fill the teeth of small children in the ordinary way of making such operation; how they resist all efforts to excavate and fill sensitive cavities. By the use of nitrate of silver, these operations are more easily made. Take approximal cavities in the posterior teeth, where the child is not too fearful and timid; cut away the walls to a V-shape, and with a piece of gutta-percha, softened by heat, of the proper size to fill the space, bring the surfaces to come in contact with the diseased part of the teeth, in contact with powdered crystal of nitrate of silver, and carry it to the place in the tooth or teeth prepared for its reception, packing it firmly and leaving it there to be worn away by use in mastication; when that takes place, the surfaces of the teeth treated will be found black and hard, with no sensitiveness to the touch or to change of temperature, and they will remain so indefinitely. In case the child is so timid and fearful as to prevent this course, dry the cavity, take out such softened dentine as the patient will permit, carry the crystal on softened gutta-percha into the cavity and pack it, leaving it until such time as desirable to replace it with a more thorough operation. On removal of this filling, the dentine will usually be found hard without sensitiveness, and needing but little excavation for the final filling.

I have treated diseased pulps with the nitrate of silver crystal

very frequently since early in my practice, especially in temporary teeth, where devitalizing pulps with arsenious acid is unsafe, applying the crystal direct to the exposed pulp, usually with relief to the patient.

Nitrate of silver is a resolute remedy; it cauterizes the surfaces of the soft tissues to which it is applied, but does not penetrate them as does carbolic acid, nor does it involve the entire pulp in an inflammatory process, tending to destroy the whole mass as does arsenious acid.

In cases of extreme sensitiveness about the necks of the teeth at the margin of the gums, where the tendency is to softening of the tissues of the tooth, a condition very annoying to patient and troublesome to the dentist, nitrate of silver has proved more successful with me than any other remedy in checking the progress of the disease and relieving the patient. The salt may be applied directly to the sensitive part without pain to the patient. A good method is to cover the parts after the nitrate is applied, with a phosphate filling-material of a cream-like consistence. That hardens and prevents the washing away of the remedy, and the surrounding parts from coming in contact with the salt.

Erosion or wasting of the teeth is checked more perfectly by nitrate of silver than by any other remedy that I have ever used. The salt is applied to the affected parts, and covered with a phosphate filling to protect and retain it in place until it is firmly established in the dentine. In cases where the progress of the disease has gone so far as to require restoration by filling, this preliminary treatment is very beneficial in preventing a further waste of the tooth substance and consequent failure of the operation.

In cases of superficial decay in soft teeth, where dark surfaces are not objectionable, nitrate of silver is very beneficial. By removing the softened portion of the tooth, polishing the surface, and rubbing the salt into the dentine, using a warm burnisher, and varnishing the parts to protect and hold the remedy until taken into the organic matter of the tooth, you will have a dense, hard surface, free from sensitiveness in mastication or change of temperature. In filling cavities in this class of teeth having an excess of organic matter, with which there is so much trouble from chemical or electro-chemical action between the walls of the cavity and the filling, an application of nitrate of silver to the walls of

the cavity will effectually prevent these unfavorable results. The remedy is taken up by the dentine penetrating the surface sufficiently to prevent any such action between filling and tooth. This treatment will at times result in a darkish hue to the walls of the cavity about the filling. This, I explain to the patients, that they may know that it results from the treatment, and that it is a proper and favorable condition for permanency of the operation. Also in crowns and bridges where the dentine is uncovered, it is beneficial to use this remedy on the teeth and roots used to sustain the bridge or crown, as a protection against thermal change and decay. The use of nitrate of silver may be varied by applying the rubber-dam and using a strong solution of the salt, and evaporating the moisture by use of a hot-air syringe. When used in this way, a solution of soda can be applied to the parts to neutralize any acid remaining. In the class of cavities extending so far beneath the soft tissues as to render the use of the rubber-dam or matrix impracticable, and a leakage of the surrounding tissues is liable to enter the cavity while introducing the filling, and injure the permanency of the operation, cauterizing these tissues thoroughly with nitrate of silver will effectually prevent such result.

After the diseased sockets and the deposit from the roots of the teeth are removed, nitrate of silver has proved more successful in restoring a healthy condition of the parts than any other remedy that I have used in the treatment of pyorrhea. The finely pulverized crystals may be applied to the diseased parts by the use of a small spatula of wood or of platinum; by slightly dampening the end of the instrument and applying it to the salts, it will adhere sufficiently, and is easily placed in the space between the gums and the roots of the teeth. After the remedy has been a few moments in contact with the part, it is best to rinse it with water by the use of a syringe.

In extirpation of pulps, where the pulp-canal is sensitive at or near the apex of the root, nitrate of silver crystal carried to the sensitive part and left there for a few hours usually relieves the trouble, and the canal can be filled without pain or danger of unfavorable results.

These are some of the many uses where nitrate of silver crystal is advantageous in dental practice. Nitrate of silver is a power-

ful remedy. It acts promptly, with great uniformity, and leaves its track in darkened surfaces when applied to the teeth. This should be considered, and its use governed accordingly.

ANCHORAGE OF GOLD FILLINGS.

DR. S. B. PALMER.

Dental Cosmos, December.

To obtain good results from gold filling, it is as important that the structure and condition of the dentine be understood as how to insert a gold filling. There must be harmony between the two, or failure will be the result. At least three conditions are necessary to produce permanent gold fillings: normal dentine, accessible cavities, and good manipulation.

The ideal filling is one of cohesive gold throughout, well contoured and anchored in firm tooth-structure. These happy combinations are not always present, thus the requirements must be met by combinations of other preparations. It is true that a few skillful operators claim to accomplish all that is required with cohesive gold alone. Allowing this claim, there is a waste of energy for the operator, and needless strain upon the patient without corresponding benefits. One thing should not be lost sight of which is a fixed law in nature : that a metal filling in the mouth exerts an electro-potential influence to decompose the fluids that may be between the filling and the walls of the cavity, or in the dentine itself when that is much below normal density ; this decomposition is according to the conductivity of the plug and its powers to resist oxidation. Thus gold, being the best conductor and non-oxidizable, acts with greater persistency than tin or amalgam. Let no one be deceived, and make a mistake in trying to circumvent this law by perfect manipulation without a cavity lining which will exclude moisture.

Although cavity lining is not anchorage, it has much to do in laying the foundation for fillings. Your attention is called to a few specific cavities and conditions of dentine, with recommendations for treatment in starting fillings:

First : Assuming that an accessible cavity is properly prepared in dentine of normal structure, with undercuts or angles so that the

first piece of gold inserted is held firmly, and upon which every other piece is made to cohere until the plug is completed, no finer filling can be produced, in appearance or for tooth-preservation, and thus credit is given to all who can do this superior work.

Care should be taken not to drill deep anchorpits into the vital dentine, as formerly practiced; much harm has been done by or through the thermal changes thus introduced.

Second: Foundations of soft gold for cohesive plugs.

A large portion of gold fillings are done in this manner, and probably each operator has a method which suits him best. The one which best answers my purpose is to commence with one or more cylinders. Without describing the kind of cylinder recommended, we might as well say pellet; there is nothing in the market that answers the purpose, and we may better give a description how to make cylinders now than later on.

Ney's No. 4 foil is best adapted for cylinders, on account of the roughness imparted to it by the book paper under pressure. Smooth foil makes cylinders too hard. The leaf may be cut into half, third, or one-fourth strips, the ribbons folded to a width according to the depth of the cavity. Cylinders should be kept on hand, and the selection made as required. The narrow strips are rolled around a broach, or better, a three-sided point attached to a firm handle; when the roll is drawn from the point, the ends should be slightly pressed with pliers.

Let us now consider a cavity, medium or large, located in the grinding-surface of a molar, surrounded by firm enamel-borders; bottom of cavity left flat or concave, as the case may be, on removal of the decalcified dentine. If the dentine is firm and dense, the cavity is ready for the gold; where soft and sensitive, yet firm enough to warrant filling, varnish the cavity with some quick-drying varnish. I am using Canada balsam dissolved in chloroform. Without waiting for the varnish to harden, line the bottom of the cavity with a piece of gold foil of two or three thicknesses; upon this lining place a cylinder which will about fill the orifice of the cavity. If too large, compress; the length of the cylinder may be one-half or two-thirds the depth of the cavity. Then commence with cohesive gold; every piece introduced remains firm and is driven into the folds of the cylinder, condensing and expanding

laterally every portion of the plug at the base by lateral pressure against the walls of the cavity, and the anchorage is perfect.

Third: Approximal cavities in molars or bicuspids, extending from the cervical border to the grinding-surface.

Contour fillings. Matrices well adapted to this class of work are made of rolled aluminum, wide enough to extend from the gums to one-half the length of crown, and beveled to knife edge. Insert the matrix of suitable thickness, and bend the ends away from the cavity, thus giving full view of and and access to cavity. The matrix is used only to prevent the first pieces of gold from falling out, and not to mold the filling. The cavity being in readiness, the portion next to the gums only should be varnished, as any such coating on enamel or even dentine prevents the mechanical bite which gold has on enamel without varnish.

Select a cylinder smaller than the cavity, but longer than its depth; carry one end of the cylinder into the cavity, and force the outer end toward the gum upon the incline made by the knife-edge matrix. When the cylinder has been firmly pressed to the cervical border of the cavity, another cylinder may be placed by its side, or one on either side, and packed as before; thus a firm and broad foundation is laid, upon which cohesive gold may be packed to finish. When done, one end of the aluminum is bent straight, and the piece drawn out by the other end. When the projecting ends of the cylinders are condensed and the plug finished, no portion of the filling will be more perfect than at the cervical border.

Fourth: Condition same as the last described, except the cavity extends beneath the gum. A case from practice will illustrate:

A patient, while absent, had occasion to have a bicuspid filled; the cavity extended beneath the gum. The dam was applied, and two unsuccessful attempts made to fill with gold; the patient returned with a phosphate filling. Examination showed it useless to apply the rubber. The cavity was prepared, and filled with amalgam to the cervical border; the remainder was filled with gutta-percha, and the patient dismissed. At the next sitting, the amalgam was cut down for a foundation, the rubber applied, and the tooth filled with gold. One year's time shows no discoloration from the amalgam.

Fifth: Cavities upon buccal or labial surfaces, extending beneath the gum, making it difficult to apply the rubber, especially

the shallow crescent-shaped cavities in centrals and laterals. Prepare the cavity with no more depth than is necessary to remove the softened dentine; let the margin be distinct, and walls at right angles with the bottom of the cavity. Protect the teeth with a napkin or paper; also fill with bibulous paper between the teeth on either side of cavity. Dry thoroughly the cavity and gums exposed, and varnish both cavity and gum, allowing the varnish to pass beneath the gum where there is space, which will prevent ingress of moisture by capillary attraction. Line the cavity with crystal gold; first go around the border of cavity, then build across until the cavity is lined with a basket of gold; upon this foundation a solid gold plug may be anchored of any cohesive gold without danger of its falling out or of decay around it.

This method is the same as given by Dr. Howard in a clinic at Rochester, and it more than meets his claims in filling the porous dentine, whereby fluids are excluded and secondary decay prevented. With a little practice, filling is made easy with this class of cavities.

Modification and adaptation of the principles here laid down will meet all conditions of anchorage for gold filling; nor is this preparation of foundations less valuable for amalgam, gutta-percha, or phosphate fillings. Indications for use of varnish under oxyphosphate are sensitive dentine or near approach to the pulp; no acid excitement is experienced with this cavity lining.

Under gutta-percha, it is valuable in fastening the filling to the walls of the cavity under conditions unfavorable for exclusion of moisture, as each piece of filling remains fixed in the cavity. It is true, chloro-percha and some of the essential oils also cause the filling to adhere, but the lining is much softer and yielding than varnish. In connection with amalgam, it may be used, as with gold, as a lining for cavities where poorly calcified dentine must remain as a pulp-covering; also in cases where dependence is placed upon oxidation to fill the dentine. So far as I can determine, this answers the same purpose with much better appearance. Amalgam fillings inserted in heavy varnish remain bright upon the surfaces in contact with the cavity walls, which is not the case in any amalgam touching dentine.

FOR MIXING CHLORO-PERCHA.

Dr. Geo. Evans forms a mass of gutta-percha in the shape of a small bowl, into which is dropped chloroform. The mixture is made immediately for any and all purposes it is to be used. By this method a thin or thick solution can be had at the same time.

GUTTA-PERCHA STRANDS FOR ROOT FILLING.

DR. R. OTTOLINGUI.

Items of Interest, December.

Take floss silk and wax it thoroughly, after which dip it into chloro-percha and cut it into pieces about an inch long. These, when dry, make gutta-percha cones which have a silk through them. They are readily packed into a canal, and the end being allowed to extend beyond the orifice of the canal, is readily grasped, in case of need, with a pair of tweezers, whereon the whole root filling is easily withdrawn. Where no trouble ensues, the root filling of this kind may safely be left in place, being quite dissimilar from cotton, as the silk fibre is thoroughly incased in gutta-percha.

CELLULOID FOR ROOT FILLING.

MR. TOMES.

British Journal Dental Science, April.

Take the thin sheets of celluloid, used to carry the sensitive photographic film, cut into thin strips, rounded by rolling and dipped into a strong collodion, to which camphor is added in the proportion of a drachm to an ounce. Wipe out the canal with absolute alcohol, the canal is filled up with collodion, and the strip of celluloid is inserted by means of plugging forceps; the celluloid being fairly stiff, and taking some time to soften the strip, can be worked fully up to the apex. Then take some shreds of gun cotton on a fine bristle and pass them up the canal; the whole now forms a pasty mass.

OIL OF CAJUPUT AND GUTTA-PERCHA FILLINGS.

To Dr. H. C. Meriam the idea is due of softening the surface of gutta-percha fillings with oil of cajuput. The material is made into a mass of size to suit the cavity, warmed and touched with the oil, which dissolves the surface of the gutta-percha, causing it to stick to the walls of the cavity, when pressed in. Such fillings can be smoothly finished with a piece of paper wet with the oil, or with chloroform.

RETAINERS FOR AMALGAM FILLINGS.

Small steel watch screws are recommended.

TO FILL THE END OF ROOTS WITH TIN.

DR. O. C. AWBREY.

After the root is ready for filling, having reamed it with suitable Gates-Glidden drills, select of suitable size, one of the tin points, made by the White Company, cut a piece one-fourth of an inch long, place in the root, and, with a suitable slender plugger and the mallet, drive it to the end. Be careful not to have the point too large.

TO REMOVE AMALGAM FILLING FRAGMENTS.

DR. S. C. SLADE.

Items of Interest, December.

In all proximate amalgam fillings, when the rubber-dam is not applied, just before filling pack a twist of cotton between the teeth well up out of the way of the cavity, then after filling and trimming, gently withdraw the cotton, and there will be no overhanging edges, or pieces of amalgam to irritate the gum.

ANCHOR POSTS FOR FILLINGS.

DR. C. J. UNDERWOOD.

Dental Review, December.

The writer cites three classes of cases showing the necessity and value of posts:

First—A proximal cavity involving the cutting edge in a devitalized incisor or cuspid. Second—The same with a living and healthy pulp. Third—An anterior proximal cavity in a devitalized bicuspid.

CASE 1. We find a large anterior proximal cavity in a devitalized central incisor, involving one-fourth the cutting edge.

After filling the root and cutting away frail margins we find the cone of the tooth gone and a thin plate of enamel in front, giving little promise of safe support for a large filling, reaching, as it will, to the cutting edge. A post is indicated; not a screw or How post, but a triangular platinum wire post, always cemented in. And to obviate the annoyance and often disastrous consequences of the post being in the way, bend it in such a way as to carry it well back into the cavity, down through the center of the tooth to a point near the cutting edge, where it curves outward to a point near the corner to be restored. The post is shaped before setting to an abrupt point, at the end toward the cutting edge, this being accomplished by flattening the wire at the end and then cutting off the corner at an angle of 45° to 60°.

The post is thus out of the way in the body of the filling, yet retaining its full size and strength to near the cutting edge, and here the taper is so short that the maximum amount of strength is secured with the minimum amount of post. Then cut the usual groove at the base of the cavity, to prevent slipping of the filling; and a longitudinal groove to receive a part of the lateral strain.

CASE 2. Is the same sort of a cavity in a 'live' tooth.

There being no circumference to the cavity, but only a base, resort is had to the post—or pin or lug, if you please.

Take a very small bur and drill a hole nearly through the tooth toward the distal side, and at right-angles with the long axis of the root, at a safe distance from the nerve and from the cutting edge. Then enlarge with a slightly larger bur till it is as large as the thickness of the tooth would suggest or justify, and cement a

properly shaped pin in place, slightly bent at the point of emergence from the tooth, toward the corner to be restored, thereby affording a better grip for the gold, and also being more out of the way while building base of filling. A groove is also cut in base of this cavity as in case 1.

CASE 3. Is a large anterior proximal cavity in a bicuspid, a filling in the buccal portion of which will show, and should therefore be of gold.

An all-gold filling is contra-indicated both by size of cavity and extent of decay at cervix, and by the generally attenuated condition of the patient's pocket-book. Put in a compound filling, the lingual portion and body of the filling amalgam, and the buccal portion that shows, subsequently, with gold. Use a post here, for two reasons—to secure greater certainty for retention, and to avoid bringing the amalgam in contact with the buccal wall of the cavity, thereby discoloring it. The post is prepared as before—beveled sharply to a point, from the point of emergence from the cement, and is placed near the center of the cavity, the point reaching the proximal surface of filling.

In cementing it in place, the cement is carried well into the buccal portion of the cavity, the lingual portion being left free for the reception of the amalgam. It will thus be seen that the post supplies the place of the buccal wall to the amalgam filling, and the amalgam affords easy retention for the gold at the subsequent sitting.

The effect of an old-gold filling is thus secured at a great saving of time and trouble, and, in my judgment, accomplishing a better result.

MIXING CEMENT.

DR. WM. RUSHTON.

British Journal Dental Science.

Mix (in ordinary cases) the oxyphosphate stiff. Thin fillings soon wash away. Have the tooth perfectly dry and ready. Mix quickly, always adding powder to liquid. If you have added too much powder, or have not enough liquid, never add more liquid, but start afresh. By adding the liquid to the half-set cement the

character of the preparation is altered. Oxyphosphate mixed thickly and quickly and introduced at once has enough adhesive power for all ordinary purposes, it sets in a few seconds and forms a much more durable filling than those introduced in a "creamy" state. Do not touch the cement filling until it is set; then trim off, always working towards the edge of the cavity, never from it.

MATRIX FOR AMALGAM.

DR. C. H. WEST.

Use a piece of metal finishing strip; hold it in place with a Booth matrix clamp. Work the amalgam as dry as possible, thus making a contour amalgam filling.

FOR SEPARATING MOLARS AND BICUSPIDS.

DR. F. W. MINSHALL.

British Journal Dental Science, April.

Fill the cavity nearly full of low grade gutta-percha and finish with a layer of harder kind.

COMBINATION FILLINGS.

Combination fillings are more popular now than at any time since the practice became a system in dentistry. The following deductions are drawn from the hundreds of pages written, and spoken on the subject.

AMALGO-CEMENT VENEERED WITH ALLOY-AMALGAM.

The cavity is filled nearly full with amalgo-cement and finished with alloy-amalgam mixed the usual way. The amalgo-cement, by mixing the cement thin, can be made very sticky, which renders it excellent in this connection for large filling in frail teeth with little wall support.

NON-COHESIVE AND COHESIVE GOLD.

There is an increasing disposition against putting cohesive gold at the margins of the cavities, especially the cervical margin. With many, the whole cavity is lined with non-cohesive and filled with cohesive gold. The filling of cavities one or two-thirds full with non-cohesive gold and finishing with cohesive is a common practice. The form in which the gold is used is varied to suit the fancy of the operator. Many are using crystal gold against the cervical wall, filling the main body of the cavity with it, and finishing with cohesive.

TIN GOLD.

This material is formed by folding light tin foil and non-cohesive gold foil together, making it into ropes or ribbons. It is said to work easily and fill rapidly, and that the two materials unite after awhile, forming a solid mass, presenting a greyish color. It can be used at the cervical base of gold fillings with excellent results. Entire fillings made of it are said to wear well, and preserve the teeth excellently. It might be called a happy medium between gold and amalgam, though worked as a foil.

TIN AND GOLD.

Tin is used at the cervical base, filling the cavity partly full and finishing with gold.

CEMENT AND GOLD.

The cavity is nearly filled with cement and pieces of gold (many prefer crystal gold for this purpose) are inserted in it, before it sets; after setting, the filling is finished with gold.

Gold fillings can be built upon anchorages made by setting the foundation pieces in thin cement completing the operation after the cement has set.

AMALGAM AND GOLD.

Amalgam is used at the cervical base and the filling finished with gold. One method is to make two sittings of the operation. First the amalgam is inserted and the remainder of the cavity temporarily filled until the amalgam has hardened, then the filling is finished with gold, anchoring it in the amalgam base. Another method is to use a matrix and insert the amalgam as dry as possible, then add the gold, working piece after piece into the amalgam. Some prefer crystal gold for adding to the amalgam. The operation is finished at one sitting.

COPPER AMALGAM VENEERED WITH ALLOY AMALGAM.

The cavity is filled nearly full with copper amalgam and finished with alloy amalgam.

AMALGO-CEMENT.

Alloy amalgam is mixed as for filling and laid aside until the cement is mixed, then the two are incorporated into one mass and the cavity filled with it.

CEMENT AND AMALGAM.

Fill the cavity nearly full with cement and before it sets, press some amalgam into it, and finish with amalgam after the cement has hardened.

CEMENT AND GUTTA-PERCHA.

The cervical margin is filled with gutta-percha and the filling finished with cement.

PROSTHETIC DENTISTRY.

RETENTION OF ARTIFICIAL DENTURES.

DR. W. B. AMES.

Deutal Review, March.

Without entering into a discussion of the principles on which depend the utilization of the pressure of the atmosphere in the retention of entire upper artificial dentures, the accompanying illustrations wlll aid in a description of a method of taking advantage of this pressure for the purpose.

The necessary condition to be obtained in the adaptation of the denture to the tissues is to have it embrace the alveolar ridge and extend backward upon the palate to an extent that the entire periphery will impinge upon and slightly displace lax soft tissue. This can only be definitely accomplished by securing an accurate impression of the surfaces of these lax soft tissues which calls for an impression of more of the surface of the mouth than it is ordinarily considered necessary to obtain.

It is important that the impression material should pass upward between the alveolar ridge and the lip and cheeks to the greatest extent possible without putting the lips and cheeks upon more than a slight tension. It must be carried accurately to the extreme height of the space at the outer side of the tuberosity when such a space exists, and it should extend upon the tissue posterior to the tuberosity for a short distance and upon the soft palate for a sufficient distance to allow of locating upon the model the line of attachment of the soft palate to the posterior margin of the hard palate. Such an impression is shown in Fig. 1.

The model obtained from this impression should not be trimmed down closer than to the heavy line A, which model presents all the surfaces to which it is desirable to adapt the denture, while if it were trimmed down to the extent ordinarily practiced a great deal of guesswork would be afterward called for. Such a model allows of molding or swaging the plate so that its entire periphery will be in nice contact with lax soft tissue and give the same retention

from atmospheric pressure that is manifested when the attempt is made to remove from the mouth such an impression as has been described. It will be necessary, on removing such a denture, to raise the lip or cheek free of the edge of the plate, admitting air beneath, before the denture can be removed. I have seen the capillaries of healthy tissue ruptured in an attempt to forcibly remove such a denture. The dotted line B, fig. 1, represents the region in which the proper laxity of tissues is found, upon which the posterior edge of the plate should rest. Some slight indentations are always present at the median line of the juncture of the

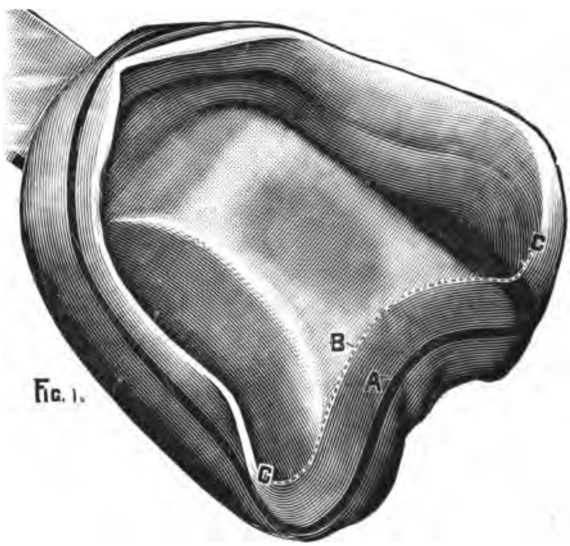


FIG. 1.

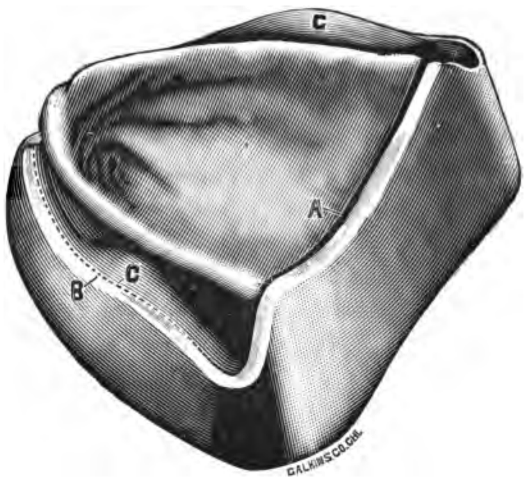
soft and hard palates. These indicate the location of the foramina in the bone through which pass blood vessels and nerves. The posterior edge of the plate should be located slightly posterior to these indentations, so that being slightly upturned it will rest against tissue of the proper laxity, but not extend upon the soft palate far enough to cause discomfort.

The posterior edge of the plate should be turned upward slightly by forming it into a groove cut into the model on a line corresponding to the dotted line B, fig. 1. This groove should extend from a point posterior to the tuberosity of one side to the same point on the other side, C. C., fig. 1. From these points forward the contact of the cheeks and lip with the rim of the plate

will properly exclude air from beneath, if this rim is carried, as it should be, to the extreme height taken by the impression material at these points.

Fig. 2 represents a model with the groove A across the palate on the line which should be occupied by the posterior edge of the plate in such case. The lateral and anterior margins should be at points indicated by dotted line B, which would give a snug contact with the cheeks and lip. With such a plate, especially in cases of extreme absorption, a great advantage is obtained by having a bearing of the plate upon the horizonital surface of the malar process of the superior maxilla at a point outside of the line of the

FIG. 2



teeth, placing the fulcrum at such a point that the denture is pressed more firmly against the mouth in mastication instead of there being a tendency to displacement at the opposite side. If the tissues forming the surface of the jaw are uniformly firm, no trimming of the impression or model will be necessary, except as has been described, but if the surface is firm in some regions and soft and flabby in others, it will be necessary to pare the impression at the points corresponding to the hard parts or the model at the points corresponding to the soft parts in order to obtain the ideal condition in which there is an equal bearing upon the palate and alveolar ridge.

In pressing to place a denture built on this plan the air is entirely expelled from between the plate and mucous surface, if the

ideal has been carried out, and the lax soft tissues at the edges form a joint that will prevent the air from re-entering when there is pressure applied upon the denture that naturally tends to displace it.

Under ordinary conditions the adhesion of contact is sufficient to support the denture, but when powerful pressure is applied during mastication in such a way that the leverage would tend to displace the plate, there is a tendency toward the creation of a vacuum beneath the denture because the air cannot enter from without, and there is a manifestation of atmospheric pressure exactly equal to the force tending to displacement.

If a sufficient force is applied, there is a laceration of the tissues, a forcible cupping of blood before the denture will leave its position. The denture is easily removed, however, by simply raising the lip or cheek sufficiently to admit air between it and the surface of the jaw.

To obtain the utmost satisfaction with a denture built on this plan, it is best that it should be dispensed with during sleep, and I often advise the patient to occasionally drop the plate from its position during the day, as this allows the displaced soft tissues at the margins of the plate to settle back to their normal contour. Constant displacement of these tissues will in time defeat the purpose it is intended that they shall serve.

TO PREVENT GRINDING THE TEETH.

"W. S. H."

Dental Cosmos, February.

Take accurate impressions of the upper and lower teeth, and make plaster casts which shall include only the teeth and the gums between them. Fit a piece of No. 17 spring clasp wire close to the labial and buccal surfaces of the upper teeth, and curve the ends around the last molars of the two sides onto their palatal cervices close to the gums.

Then put the two casts together as they naturally articulate, and model beeswax over and between the buccal surfaces of the upper molars and bicuspids, and over the coronal slopes of the lower molars and bicuspids, taking care that the straight lower edge of the

wax work shall extend but a sixteenth of an inch vertically over the lower teeth, and that the nearly straight edge of upper teeth wax work shall not go beyond the buccal cervices of the teeth, and the thickness of wax be no more than necessary to cover the wire as it lies in contact with the molars and bicuspids. On the inside the wax is modelled only between and not quite out to the palatal surfaces of the upper molars and bicuspids.

When the wax work has been properly done, the upper cast is then set in the upper half of a vulcanizing flask, and the investing plaster modelled so as to avoid contact with the lower cast, and permit a subsequent investment of the lower cast that will allow the separating of the casts and flask-halves as usual. The gating of the flask should be done so as to insure the closest possible shutting of the flask, after packing only just enough rubber into the spaces left by the melted-out wax.

If the preceding directions have been carefully followed and the piece properly finished, there will result a gold and vulcanite fixture which may readily be slipped onto the upper teeth; will not obstruct the normal occlusion of the teeth; wil not preclude speech; cannot fall into the mouth at the risk of being swallowed or of choking the wearer, yet will effectually prevent the lateral and forward movements of the lower jaw which are essential to the act of grinding the teeth upon each other.

TO PREVENT CLICKING OF ARTIFICIAL TEETH.

Items of Interest, June.

Dr. A. A. Hazeltine says to overcome this trouble the articulation must be perfect and the cusps on the teeth preserved.

RUBBER DAM BETWEEN THE FLASKS.

DR. G. M. MERRITT.

Items of Interest, June.

In closing flasks, either by simple pressure or by boiling, use rubber dam wet with soap water instead of muslin, and you will be delighted with the result.

WORKING PINK RUBBER.

DR. W. H. STEELE.

Items of Interest, April.

PACKING.

Have a copper dish, about five inches in diameter, and of same depth, with a flat burnished copper cover. After removing the base plate, and all large pieces of wax from the flask, place the part containing the teeth in the copper boiler, and cover with boiling water; set it on the kerosene stove and thoroughly wash out all wax with an old syringe; let stand in the boiling water while cutting the rubber for the gums. The rubber should be cut in small squares of about one-eighth and one-fourth inches; also, cut two long strips wide enough to reach from just above the pins to a little above the top of the plaster and of sufficient length to extend clear around the rim; place the pieces, as cut, on the boiler cover. The flask being now well heated through, remove from the boiler to the bench; put something under the heel to raise it a half or three-fourths of an inch. Place the boiler containing the hot water on the bench beside the flask, and put the cover (with the cut rubber) on the boiler. Use a pointed excavator in the left hand, and a small rubber packer in the right; pick up the pieces with the excavator and force into place with the packer.

The first piece of rubber is placed between the centrals, and packed well down between the teeth; continue around, from tooth to tooth, till the molars are packed; then begin back and work to the molars on the other side. In packing, use the smallest pieces of rubber down between the teeth, building in the larger pieces last. Next, pack the wide bands, letting them extend entirely around the rim; the lower edge being just above the pins, the upper reaching a little above the plaster. Now, pack in the plate rubber, being careful, if any surplus is put in, to pack it in the deepest part of the arch. If these directions are carefully followed, there will be no difficulty in packing, and no red cropping out on the gums of the finished plate.

VULCANIZING.

Pink rubber should not be overheated, either in warming to pack, closing the flask or vulcanizing. It causes it to be brittle, makes it darker and gives it a dead appearance that no amount of

bleaching will remove. Pink rubber, in fact all rubbers, are tougher, have a better color, and take a better finish, when vulcanized in dry steam.

Any ordinary vulcanizer can be converted into a dry steam machine, as follows: Have a tinsmith make, from heavy sheet zinc, a basin-shaped dish, about the depth of a flask and a fourth of an inch smaller in diameter than the inside of the boiler. Have the bottom perforated all over for the escape of steam. When getting ready to vulcanize, put this cup in the vulcanizer, bottom up, set the flask on it, and put in just water enough to reach half-way up the cup. By this method, we have a dry steam vulcanizer that does the work as well as many of the high-priced ones. Another point that is important: We should get used to vulcanizing and working one kind of pink rubber, and we will have better success than by changing around, as every make has its peculiarities. I have tried many kinds, and have finally settled down to two makes—the S. S. White pink and the Welch pink—either of which will give good satisfaction, if properly worked. It is almost impossible to do correct vulcanizing with a thermometer. Every vulcanizer should have a good, reliable steam gauge for governing the temperature. Vulcanizing cannot be done by guess work. Ascertain the time and temperature that gives the best results with the rubber you are working, and adhere to it in every case.

FINISHING.

In using pink rubber for gums, it is quite a difficult task to properly finish close around and down between the teeth, especially when the case has been roughly waxed up. This work can be all saved if the wax model is carefully shaped, just as the finished gums are desired. Now, take a piece of tin foil (such as is sold in the depots for covering casts) and burnish it over the face of the wax. This should be carefully done, letting it extend well up to the top of the rim, then bent out at right angles to form a flange. The lower edge should be worked down neatly betwen the teeth and made to fit close. Do not displace the foil in washing out the wax or in packing. When a plate, thus treated, is removed from a flask, it will only be necessary to use a fine file to shape and round up the top of the rim, and a graver to go around the tops of the teeth to round up the gum margins. Put a composition cone on the

lathe head, with pumice and water; smooth out all file marks. Now, put on a soft brush wheel in place of the cone; keep the gums and wheel wet with a thin mixture of whiting, water and glycerin; run the brush at a high speed to give the final polish. To make the glycerin mixture, add fourth ounce glycerin to three and a half ounces of water; use this to wet up the whiting.

PALATINE SURFACE OF PLATES.

Much labor in finishing can be saved, if care is used in fitting the case up. In putting on the base plate, do not make it too hot and then press it out of all shape. Warm it just enough to work, put it on the cast and fit down carefully into the depressions, rounding up over the ruga, bringing out their natural shape and retaining the original thickness of the base plate. To do this, it is often necessary to use a rubber packer or burnisher. In waxing up to the teeth, use only enough material to cover the pins. Smooth the plate up neatly, then burnish on tin foil, as described for the gums, letting it extend up on the teeth a little. Remove from the flask, dry and finish, as described for the gums.

TO PREVENT DARK JOINTS.

DR. G. M. MERRITT.

Items of Interest, June.

After the case is flasked, open and remove all traces of wax, put a drop of water on the joint, and with a quill tooth-pick work in a little dry plaster; after standing ten minutes pack and vulcanize. If properly done, you can't have a dark joint if you want one.

TO MAKE PLATES FIT.

DR. J. D. PATTERSON.

Western Dental Journal, September.

Secure a perfect impression, trim the hard portions in the impression, or the soft upon the model, marking carefully with pencil from examination of the mouth the places which need attention. Then if the articulation is right you have guarded two principal points at least.

TO MAKE A SMOOTH METAL MODEL FOR VULCANITE.

DR. S. B. COOK.

Dental Register, October.

Take a plaster impression, build up a thin plaster wall around it, by first inclosing it with a piece of sheet lead or tin or thick writing paper, and pouring the plaster wall around the edges; let it dry thoroughly, then smoke over a tallow candle, and pour in the metal.

Dr. J. S. Thompson uses pure block tin; Dr. W. G. Browne prefers tinners' solder.

INVESTING MATERIALS.

Plaster	2 parts
Marble dust	1 part
Plaster	1 part
Sand	1 part
Plaster	1 part
Asbestos	1 part

BABBITT METAL.

Copper	1 part.
Antimony	2 parts.
Tin	8 parts.

Melt in the order named; remelt and cast into ingots.

SILVER SOLDER.

Silver	6 parts.
Copper	3 parts.
Zinc	2 parts.

TAKING BITE.

DR. C. H. STADLINGER.

Items of Interest, January.

The bite is taken in the ordinary way with wax, marking the medium line and also the length of the lip. It is placed on the cast and run. Before opening, wax a narrow strip of paper on the top of articulator and let it extend over the front to the mark in the wax indicating the length of the lip. Open the articulator and the paper represents the lip, accurate and simple. Wax can be used instead of paper for the indicator.

SILVER PLATE.

For silver plate, use to one ounce of silver two pennyweights of platinum.

IMPRESSION CUPS AND IMPRESSIONS.

DR. R. R. FREEMAN.

Dental Register, October.

In the selection of an impression cup never hesitate to cut, bend, or twist one, or even construct one especially for the case in order to make it conform to what you desire. Never let the impression material extend beyond the margins of the cups, or you will have imperfect margins. The ideal cup should come within the thirty-second part of an inch of touching every part on which the body of the plate is to rest, the palatal border resting in easy contact. When the cup, with the impression material, has been placed in position in the mouth, the cheek should be drawn out, and the lips first down and forward and then pressed upward, bringing the plaster firmly against the alveolar border, before the plaster begins to set. While the cup is held up with sufficient firmness to prevent displacement, there should be an apparent movement as though to draw it downward and outward so that the muscles will be relaxed. If driven up too tightly the tissues will

be hard and compressed unnaturally. Of course it can not actually be held up and drawn out at the same time, but the pressure should be exerted as though it were about to be drawn out.

When the teeth are set the plane of mastication should fall lower in the rear than in natural occlusion, and there will be less likelihood of displacement during mastication, and the tendency of the plate will be to become firmer with use. A cup for the lower plate should have deep wings extending below the line where the plate is to rest to avoid enfolding the mucous membrane, and pressing away the tongue at its base.

FLEXIBLE VALVE AIR CHAMBER.

DR. W. G. BROWNE.

After having packed the case with the vulcanite base, with a piece of linen cloth over the model, open the flask, remove the cloth and place a piece of soft rubber, double thickness, about the size of the air chamber in position of the chamber, close the flask and vulcanize. In finishing, scrape the lingual surface until the color of the soft rubber is seen.

RETAINING LOWER PLATES.

DR. R. R. FREEMAN.

Dental Register, October.

A lower plate should always extend well back and up along the ramus to prevent wabbling in the mouth. A well defined ridge extending around the border, say within one-eighth of an inch of the gum margin, will assist greatly in retaining it in position. This is easily made, after the teeth are waxed up, by using a piece of wrapping twine which has been saturated in wax, made to adhere just where you want it by a puff of the blowpipe flame. When reproduced on the plate it will afford a line on which the lip will take hold, causing it in many cases to adhere with great tenacity to the jaw.

TO PREVENT POROSITY IN THICK VULCANITE.

DR. D. V. BEACOCK.

Dominion Dental Journal, May.

Cut pieces from an old rubber plate, scrape or file the surfaces clean and put the thickest part among the new soft rubber when packing. Small pieces of Watt's metal or block tin will answer the same purpose when weight is no objection; for lower cases the metal is best.

Where bulk is desired without weight, pieces of fine grain cork are excellent.—ED. COMPENDIUM.

TO LINE PLATES WITH BLACK RUBBER.

DR. G. A. YANT.

Western Dental Journal, September.

Plates can be lined with black rubber without its showing through the red, by dissolving the black rubber in chloroform and painting the model two or three good coats; wait a few minutes before packing other rubbei upon the black.

MELTING AND ROLLING GOLD.

DR. W. C. BARRETT.

Dental Pracitioner and Advertiser, July.

In melting gold, charcoal, gasoline or illuminating gas, are the best fuels. Coal should not be employed, as the gases from it make the gold brittle. There is nothing better than the Fletcher furnaces, which are heated by common illuminating gas. The gold or alloy should be put in the crucible and a little borax added. Do not employ the great quantity that is too frequently used. The ingot mould should be warmed, but not heated. When the gold is melted, turn it into the ingot mould and let it cool. If the amount is considerable, it should then be broken into as small fragments as practicable, and melted over again, without borax. When fairly

melted, add for every four ounces a piece of saltpetre the size of a pea, or a teaspoonful of sal-ammoniac and charcoal. Cover for a couple of moments and then pour.

A great deal depends upon the way in which gold is rolled. Unless a heavy strain be put upon it the first and second times passing, it will stretch the gold on the surface, while the middle portions not being pressed will retain the granulations of the melting process, and the gold will crack. A heavy strain at first imparts the right grain to it all the way through.

When the ingot has been rolled to about twice its length, if it be as fine as 18 K. it should be annealed. If it be an alloy less fine, it should be annealed sooner. It should not be quenched until it has become black, or it will be likely to split or seam.

HOLBROOK'S PLATE.

DR. W. D. HOLBROOK.

Dental Cosmos, September.

FOR LOWER DENTURES.

Take a full and perfect impression in wax. Press it well to the jaw. In this, take the impression again in plaster of paris. From the bottom of this plaster impression scrape out evenly to a depth equal to the thickness of a No. 3 separating file, one-sixteenth of an inch nearly, from end to end. Leave about one-fourth inch, for the ends of the plate, untouched. A cast taken from this will have a raised ridge, and a plate made upon this cast will have an air space between the jaw and plate. This will allow the plate to rest upon the soft tissue on each side of the central bone, like a saddle upon the back of a horse, instead of hanging upon the bone as it does in most cases. Let the plate run down as deep as possible, and be thick enough to round off the edges inside and out. Do not disturb the sides of impression or cast, for this is the bearing.

FOR UPPER DENTURES.

Take the impression as for lower dentures, described above. Scrape out from the impression the whole length of the median line. Now find out how far the hard, bony surface in the roof

extends, and scrape off the impression to correspond with the bony part, not heavily, but lightly enough to relieve it from pressure. Do not scrape off where the mouth is soft. A cast taken from this impression will be raised just as much as you have taken from the impression, and the plate will not rock on the center. Now cut into the cast on a line between the hard and soft palate for the back edge of the plate. Begin a half-inch or less forward of the cut line, and chamfer it down to a depth of one-sixteenth of an inch or less, as the case may be. If soft, cut deep where softest, and less where hard. Be sure and get the back edge of the plate up to the roof snugly; dentists have ever failed to do this. Make the back edge of the plate thin as a case-knife edge, then soften it in hot water (if rubber) and press it firmly to the mouth. Use a strip of fine tea-lead around the border of the casts, and it will prevent holes in the border of your plate; or, what is better, use for base-plate four or five thicknesses of fine tea-lead, each burnished down into the rugæ, and the plate will be of uniform thickness.

A plaster cast taken from the lower jaw, when the alveolar border is very thin and sharp, will condense when under screw pressure in bringing the flasks together, in rubber or celluloid work; so will a metal cast under heavy blows in swaging a plate. Just as much as the cast settles, just that much will the plate lack of being as deep as the jaw it was designed for, and it will ride upon the central bone. The process described overcomes the difficulty and secures a suction in a large majority of cases. A thick, heavy border will not settle so much, therefore less scraping out is required, but in all cases raise the cast, more where thin, less where thick, but do not scrape out too much, and only from the bottom of the impression. When the border is all absorbed and nothing but a flat surface left, you will continue the scraping out around the circle where the bone ought to be. This will give suction.

UPPER PLATES.

On the palatine or back side of the cut line for the back edge of the plate, you will leave it untouched. Do not disturb it, the cut line being at right angles with the cast, it gives you a guide to go by, showing just how high you are raising the back edge of the plate. This done, your whole plate is a suction. Follow well

these instructions, and you will succeed and be in possession of the best system ever given to the profession, and you will realize that your troubles are over in this line of work.

IMPRESSIONS FOR ADDING NEW TEETH TO OLD PLATES.

DR. R. E. SPARKS.

Dominion Dental Journal, March.

Dry the plate and stick on a piece of soft wax opposite where each tooth is to be added. Replace the plate in the mouth. If the case be one where the teeth to be added are to replace some which have been extracted, press the soft wax up over the gum. This gives an impression of the part with the plate in place. While the wax is still soft have the patient close the mouth. This gives an articulation opposite where the teeth are to be added. While the mouth is shut, see that the wax is not forced away from the gum by the occlusion. With a pledget of cotton, dipped in cold water, the wax can be hardened in a moment.

MAL-OCCLUSION OF ARTIFICIAL MOLAR TEETH.

DR. W. C. BARRETT.

Dental Practitioner and Advertiser, October.

Sometimes dentists find a great deal of difficulty in properly articulating artificial teeth. When the denture is completed, it is found that the molars strike too quickly, while the anterior teeth do not occlude at all. It becomes necessary to grind off the molars until the cusps are entirely removed, and a disagreeably smooth surface, unfit for mastication, is the result. Often, too, there is an annoying "click" when the teeth are brought together.

Usually this is the result, either of crowding the anterior portion of the wax articulating model beyond the point at which it rested when the bite was complete, or of allowing the posterior portion to rise, either of which will make the plaster casts of the

occluding molars too short. The "clicking" is due to imperfect occlusion.

The undue length of the molar teeth may be, in some instances, owing to other causes, such as an improperly proportioned articulation, or to the springing of the posterior portions of the plate when a rubber base is used, but the most common cause is that first quoted.

Many a perfect fitting plate has been made almost useless by presenting two inclined planes upon occluding teeth. It is loosened by sliding backward or forward down this inclined surface, while perfect mastication is effectually prevented. More dentures fail by reason of bad occlusion, than through a poor fit.

TO MEND BROKEN RUBBER PLATE.

DR. CHAS. A. OTTERBEIN.

Stick the parts together with chloro-rubber (they will hold.) Invest in the lower half of the flask, palatal side down. Let no plaster cover the rubber on the lingual side. Soap and finish investment. After the plaster has set, open, and with a laboratory bur in the lathe, or with scrapers, scrape the rubber all over and very thin at the broken lines; put on new rubber and vulcanize.

Should the plate need additional strength at any point lay a piece of gold or aluminum plate at the point and cover it with the new rubber.

ARTICULATING MODEL FOR FULL OR PARTIAL UPPER.

DR. DAN. M'PHEE.

Dominion Dental Journal, March.

It will be found advantageous when making an upper plate on rubber (full or partial) to take an impression of the under teeth also. When this is done, insert the model jointly into the occlusion left by the under teeth in trial bite; then put the case into the articulator.

GOLD ALLOYS FOR PLATES, CLASPS AND WIRE.

DR. C. N. JOHNSON.

Dental Practitioner and Advertiser, July.

For 18 carat plate.

No. 1.

Pure gold	18 dwts.
Pure copper	4 dwts.
Pure silver	2 dwts.

No. 2.

Gold coin	22 dwts.
Pure copper	2 dwts.
Pure silver	2 dwts.

For 22 carat plate.

Pure gold	22 dwts.
Pure copper	1 dwt.
Pure silver	18 grs.
Platinum	6 grs.

For 20 carat alloy for clasps and wires.

No. 1.

Pure gold	20 dwts.
Pure copper	2 dwts.
Pure silver	1 dwt.
Platinum	1 dwt.

No. 2.

Coin gold	20 grs.
Pure copper	8 grs.
Pure silver	10 grs.
Platinum	20 grs.

TO REMOVE TEETH FROM RUBBER PLATE.

DR. J. E. LINE.

Odontographic Journal, October.

Lay the teeth down on a piece of asbestos board and hold the board over a flame until the rubber softens.

METAL DIE FROM MODELLING COMPOUND IMPRESSION.

DR. G. V. BEACOCK.

Dominion Dental Journal, March.

Use an alloy that melts below the boiling point of water, melt it in boiling water and pour into the impression. It can also be poured in plaster impressions without drying them.

ALLOY FOR LOWER PLATES.

DR. G. V. BEACOCK.

Dominion Dental Journal, January.

Bismuth	1 ounce.
Tin	15 ounces.

May be improved by adding a little silver. Melt and stir till thoroughly mixed; run into ingots. Keeps its color well and vulcanizes with rubber attachments nicely.

PREPARING MOUTHS FOR ARTIFICIAL DENTURES.

DR. T. F. CHUPEIN.

Dental Office and Laboratory, March.

In the preparation of a mouth for artificial teeth there are certain indications for the extraction or retention of certain teeth. Thus, should a solitary central incisor or cuspid remain, these should be extracted before attempting to make the artificial substitutes. Should there be one molar tooth on one side of the mouth, this should also be extracted. But if one molar tooth be good on one side of the mouth, and its fellow on the opposite side be in a very dilapidated, decayed condition, every effort should be made to restore this tooth, going even to the extent of crowning the root rather than extracting it, for with two molar teeth by which the denture may be clasped the substitutes will be of infinitely more service to the wearer. Such a condition is applicable

to both jaws. When the six lower front teeth remain, with two bicuspids on either the right or left side, the bicuspids should be extracted, though they be not decayed, because to let them remain will defeat the usefulness of such a lower denture.

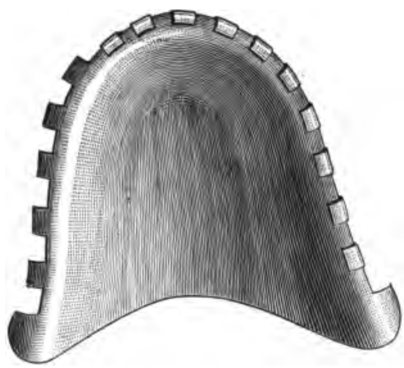
COMBINATION METAL AND VULCANITE PLATE.

DR. C. P. CHUPEIN.

Dental Office and Laboratory, March.

It has occurred to me that the object might be easily attained by the use of a metal plate, gold, platinum or aluminum, as follows:

A die and counter die are made. Should the gums present a protrusion this will be of no consequence, so that even if the model drags in the moulding sand at this point, it will make no difference.



The plate is swedged so as to come even with the outer edge of the ridge, not to lap it. It is then nicked, and each alternate nick cut out as shown in the cut.

When the teeth are ground and articulated, a matrix is made to hold them in position, the wax is removed and the nicks bent up, as is shown. The case is then waxed up, flasked, packed, vulcanized and finished. In this way the teeth are held firmly to the plate. This plan may be employed for a temporary as well as a permanent plate. In the case of a temporary plate, when the gums shrink to such a degree as to make the teeth uncomfortable to the patient,

or do not hold in place from the lack of proper adaptation or general absorption of the gums, the teeth may be removed from the plate, and the same plate re-swedged by means of new dies and counter dies; this may be done provided there is no central soldered air chamber. If the plate has such a chamber, then of course the case becomes more difficult and entails more work. On one side of the cut the nicking ot the plate is not turned up to show how it is to be done before these parts are turned over or bent so as to engage in the vulcanite.

TO MAKE RUBBER PLATES WITH THE BEST RESULTS.

DR. W. N. MURPHY.

Texas Dental Journal.

Take upper impression with plaster, using salt to hasten the setting and a few drops of cochineal in the water to color it. Take all lowers with modeling composition, never using it after it becomes old and tough. After making models, boil them fifteen or twenty minutes in sterine and prepare wax forms for taking bite, which should be carefully done, so as to indicate the exact .length for the teeth, then harden in cold water. Now place a thin layer of soft wax on one of them and put both in the mouth, putting the left hand on the forehead and the right on the back of the neck, force the patient's head back and at the same time directing to close the mouth and hold firm, which will insure a natural closure. The median line is then marked up and down; the position is then noted or marked for the canine teeth. Then, with the point of a small instrument, make a mark in the wax rim from one corner of the mouth to the other, equally dividing the lips. The case is is then put in the articulator, and a strip of paper, about one-fourth of an inch wide, is pasted into the upper model with a drop of hot wax, one at each corner of the mouth and one in the center, and coming down to the mark indicating the dividing line for the lips. Plain teeth are then mounted accordingly, and the wax gums carved up just as they are to be when the case is completed and ready for the mouth. It must be understood by this that there is to be no

scraping, filling or polishing to complete the case after it is vulcanized, except the little to be mentioned later on. Now, having carved up the wax gums to the proper form, thickness, etc., cut a pattern of No. 60 tin-foil to cover all of the lingual surface of the wax, which is to be well burnished down on that portion of the wax, which is to be only one thickness of pink, with no air chamber under it. The tin is then so trimmed and adjusted as to completely conform to the necks of the teeth. A strip, say one-fourth of an inch wider than the wax rim of the alveolar ridge, is then drawn round from heel to heel, and so completely and so nicely burnished down to the wax, and so accurately trimmed and adjusted to the festoon margin of the gums that no trace of wax that is to be replaced by rubber will be left exposed to the plaster investment; there should be no trace of wax left on the teeth. The upper edge or the excess in width of tinfoil is then cut into V-shape notches and the V's turned at right angles; then it is ready to invest right up to the upper edge of the wax, with the teeth down; the V's are then turned down into the soft investment of the first half, so as to prevent the tinfoil tearing down in flasking the case after it is packed. The wax is now washed out and the teeth, pins, and all parts are wiped off with chloroform so as to remove all traces of wax. The packing is then done so as to have just one thickness of polson pink rubber as a facing for that portion of the labial surface exposed to view when in the mouth; no traces of the red rubber being visible through the pink. No waste gates are to be used, consequently great care must be taken in the process of packing. Now run the vulcanizer up to 275 degrees and let it stand fifteen minutes, then take fifteen minutes to run up to 310, and then cool down slowly.

TO OVERCOME THE ODOR FROM CASTING IN OILED SAND.

Dental Tribune, December 24.

The odor arising from casting a die in sand mixed with oil can be overcome by placing, over the moulding ring, a tin can; the vapor of oil is condensed by the cold can and prevented from escaping into the room.

RULES FOR VULCANIZING.

Odontographic Journal, October.

Dr. Southwick says his rule is to vulcanize repairs and small partial plates one hour at two hundred and ninety-five degrees, and full dentures three hours and fifteen minutes at two hundred and seventy-five degrees. Four hours at two hundred and fifty degrees gave even better results. Given rubber of good quality, time and temperature determined the excellence of the product as vulcanite. His rule is low temperature and long time.

TO REPLACE BROKEN TOOTH ON GUM SECTION.

DR. R. E. SPARKS.

Dominion Dental Journal, November.

With a corrundum wheel on lathe or engine, cut out the balance of the tooth around by the artificial gum margin, leaving the gum intact; then grind a plain tooth to fit, and attach as in any ordinary case.

CORES FOR UNDER-CUT METAL MODEL.

DR. D. W. PARSONS.

Ohio Journal Dental Science, December.

The making of metal lowers where the incisors and canines are standing is one of the most difficult things for a mechanic to do. There is nearly always a great ridge standing out at the internal alveolar edge which renders the casting of the model a very difficult, in fact almost an impossible task. Cast first what is called a core. Make the model as smooth as possible, then take some thin tin foil and cover the inside of the model, pressing the tin very closely to the plaster; then take flour and casting sand in the proportion of 20 of flour to 100 of sand, mix these well together first day, then moisten the mixture slightly to about the same extent one would ordinary casting sand, and press it well on to the model

with the fingers, bury a piece of strong wire in it, leaving a piece standing out at the back as a handle, if you like, then fill up to the top of the undercut only; then when this is firmly pressed together, (leaving no bits overhanging) draw it out at the back, and then place the core in the oven until it is baked perfectly hard and dry. (Two or three should be made, in fact a fresh core should be used for every zinc casting). When dry, place the core (having cut off the handle at the back perfectly level with the sand) in the model and then cast in the ordinary manner; the undercut will lift out the core when the model is taken from the sand; it can then be removed from the plaster from behind and placed back in the sand, and then the zinc poured in. The casting when cool will require very little trimming and the undercut will be found almost perfect. This only requires a little practice to produce an excellent model.

TO POLISH PLATES.

DR. D. A. NASH.

Coat a dry felt wheel by holding a piece of parafine against it while revolving and apply any polishing powder desired; finish with soft brush.

EASY WAY TO MAKE METAL DIES.

DR. W. H. STEELE.

Western Dental Journal, October.

Take the impression, and make the plaster model as usual. When the model is hard, shape it as you want the metal die; cover it with heavy tin foil, making a perfectly smooth fit. Now lay the model on a piece of glass, tin side up, and cover it all over with plaster, from one-fourth to one inch thick, making it thick on palatine part, and then on rim, especially if there is a good deal of undercut; when the plaster sets remove the model. If the rim breaks in separating, replace and back up with new plaster, mixed thin; this gives a tin-lined mold for casting in. Put the mold over

the kerosene stove, and when hot pour in the zinc or Babbitt metal. The metal should not be too hot when poured; have it just so it will scorch white paper without burning. In putting the tin on the model, and in separating the model from the mold, care must be used not to tear or puncture the tin. Smoke the die or coat with whiting and cast the counter as usual.

THIN FLEXIBLE RUBBER PLATES.

DR. W. G. STOWELL.

Dental Review.

Wax up the case in the usual manner. After trying in the mouth to see that it is correct, fasten the outer rim solidly to the cast with wax, then cut out the wax from palatal portion and burnish tea-lead in its place, letting it come up well around the teeth. Flask as usual, and after washing out the wax and removing the lead, apply dry heat to the case to dry the surfaces, then paint with liquid silex; the heat of the case will soon dry the silex. Make a good large gate at heel for surplus rubber, and pack the same as for thick plate, using black rubber for palatal portion. Care must be exercised in cutting away surplus, not to split the thin rubber. The polishing can be done with brush and cotton wheels. No scraping or sandpapering necessary. This makes a much pleasanter plate to wear in the mouth, and gives better satisfaction to the wearer.

ARRANGEMENT OF ARTIFICIAL TEETH.

DR. R. M. WALKER.

Dental Headlight, July.

One great mistake is in trying to have a fixed rule for the arrangement of teeth. There are, comparatively speaking, no fixed rules in dentistry. Each case must stand or fall upon its own merits, and each should be judged without any regard to any other.

The first point to which attention is called is the selection of teeth. We have most commonly to deal with upper sets with

natural lower ones—the teeth should be the same color as the natural ones, of a size to form what we call a good articulation, the point of the superior cuspid fitting between that of the lower and first bicuspid; next they should be the same shape and general appearance of those remaining. A little space judiciously applied will, in a majority of cases, tend to a more natural appearance, and in this way a good articulation may be obtained with teeth much smaller than would be required were they set close together. The most space should generally be left between the centrals and laterals; the latter should be a trifle shorter than the former, and just a trifle out of line, not enough to be called an irregularity. Unless the case demands it, the cuspids should be made prominent, particularly at the necks, thus hiding the bicuspids, which should scarcely show from the front. These points must all be modified to suit each individual case. This can only be intelligently done by trying in the mouth on wax or other temporary plate; then the little peculiarities of the case may be studied and changes made to accommodate them. The bicuspids and molars must of necessity form a good occlusion with the opposing ones, but even here a little judicious grinding may make a great improvement. The teeth must, of course, be the proper length; the lip, when at rest, is usually a safe guide. If they are too short, the jaws close together too much, giving the appearance of nose and chin trying to meet; if too long, of course they are just as bad.

Another point which is often overlooked is giving the teeth the proper slope from the gum margin to the cutting edge. They are too often made nearly perpendicular, when the points will generally stand a slight outward slant. This must be governed by the shape of the mouth and position of the lower teeth. Avoid what is called the horse shoe arch, the widest point where the bicuspids would come, and narrowest at the second molar. By reversing the order you come much nearer the desired arrangement. It is sometimes necessary to place the six anterior teeth nearly straight across, in order to restore the contour of the lip, and this regardless of the shape of the ridge, which, though often a safe guide, is not infallible.

In arranging upper and lower sets more liberty may be taken in some directions and less in others; a little variation in shade is not so noticeable, but little, white teeth in the mouth of a large,

swarthy person would not suggest a very close study of nature. More care is required in selecting the size. Not having any to go by, you must have each tooth occupy the place which you are led to believe the natural one did, spacing or lapping as the case may require. Not having any natural teeth to match gives more liberty with the bicuspids and molars. The former may be placed in so as not to show, the latter turned outward and upward. In some cases the upper teeth must protrude in order to hold the upper lip in its normal position without forcing the lower to an abnormal one, while others will require being set nearly or quite "on end," as we say, for comparatively the same reason.

STEDMAN'S SPRING FOR FULL DENTURES.

DR. L. P. HASKELL.

Ohio Journal Dental Science, January.

It consists of a spiral spring enclosed in a tube, made of nickel, about one-half inch in length, and three-sixteenths in diameter. The tube has a cap, removable, through which passes a pivot to which motion is given by the spring. The second molar is left off the plates, and the tube vulcanized to the lower plate, and a piece of metal vulcanized to the upper plate, against which the pivot presses. Platinized gold makes the best spring.

TAKING IMPRESSIONS OF IRREGULAR TEETH.

DR. V. H. JACKSON.

International Dental Journal, May.

Impressions of irregularities are usually more satisfactory when taken with some of the compounds, as the surface of the model is more smooth than when taken in plaster, and is more agreeable to the patient. If the teeth are long, and there is danger of the compound dragging while being removed, a quantity of pulverized soapstone should be sifted over the surface before taking the impression.

If the second or third molar is inclined forward into the space formerly occupied by the first molar, the difficulty can be overcome by placing a rounded piece of soft compound between it and the next tooth, and allowing it to harden in such shape that there will be no undercuts. When well shaped and sufficiently hard, the impressions should be covered with one or two layers of paper, and then removed and placed together. If the operation is well performed, a perfect impression is the result. A little water injected under the lip will relieve the tendency to suction, and thus remove the danger of drawing the compound up in the center, which often spoils the impression.

PLATES OF SOFT AND HARD RUBBER COMBINED.

DR. OSMUN.

International Dental Journal, May.

Dr. Osmun says in very flat mouths, where it is impossible to make a successful plate of hard rubber, he has succeeded well by lining the plate with soft rubber. First lay over the model a thin sheet of soft rubber, which is made to hold to the model by coating the model with soft rubber dissolved in chloroform; over the sheet of soft rubber is layed the sheet of plate rubber. Great care must be taken in packing to prevent the hard rubber forcing its way through the soft.

Dr. N. W. Kingsley, in speaking on the subject, says the best results are obtained with soft rubber by not heating above 260°; and it wants to be vulcanized from four to five hours, beginning at 240°, and running slowly up to 260°, and allowing it to remain two hours at 260°. In that way you get it very satisfactory. You cannot vulcanize hard rubber and soft rubber together at the same time and get the best results. The heat may be run up to 300°, but the work will be far less durable, will not last as long, and will be less elastic; nevertheless, it is very much better than a hard surface. To get the best surface, it should be vulcanized on metal. The making of lower teeth is a little more work, I grant, but it is better. Have your cast made of tin or type metal, and have it polished

smooth with pumice-stone, and then vulcanize on that, and you will have a beautiful surface, as fine and smooth as glass. If the edges spread out, or if you have feather edges, take scissors and trim the edge off to the shape you want; then take a hot instrument, and run it over the edge. That will leave a partly-melted surface, which is bad, but that is remedied by taking a rag, dipping it in chloroform, and rubbing it over the surface.

There are circumstances in which it would be inconvenient to vulcanize the hard rubber at 320°, and then subsequently attach the soft rubber and run the heat up to only 260°, but in these you can vulcanize as you have done. It will not absolutely spoil the soft rubber to run the heat up to 320°, but it injures it. If it were not for the hard rubber, it would be rotten and worthless, and it would be an imposition to give it to a patient.

TO PREVENT MODELLING COMPOUND STICKING TO IMPRESSION CUPS.

Ohio Journal Dental Science, February.

Dr. Melotte suggests the use of a suitable piece of linen spread into the tray and fastened at the sides and through the bottom by means of the flat wire fasteners used by bookkeepers. When in place put in the compound, and after separating from the tray remove the cloth and the tray remains bright and clean.

TO OBTAIN THE EXACT QUANTITY OF RUBBER FOR PACKING.

DR. W. H. RICHARDS.

Take a level board and tack to it two strips of wood of the thickness of the rubber to be used, and about as far apart as the width of the rubber; make a rolling pin out of a straight round broom handle, save all the wax from the case, warm it and roll it out on the board until the pin touches the strips; the wax is now the thickness of the rubber; lay the wax on the rubber and cut the rubber the shape of the wax.

TO AVOID BREAKING GUM SECTIONS WHEN VULCANIZING.

DR. D. V. BEACOCK.

Dominion Dental Journal, July.

Grind the tops square and don't let the rubber come over them; in waxing up the case scrape off the wax level with the face of gum, then when the rubber shrinks it will draw over the square ground surface without cracking the thin porcelain. Another caution is not to have any air-bubbles in the plaster at the back of the gum, and be careful when pressing the flasks together to give the rubber sufficient time to spread and adapt itself over the matrix left by the wax.

TO PREVENT IMPRESSION COMPOUND STICKING TO THE TEETH.

DR. ABIEL BOWEN.

Items of Interest, February.

Immediately before taking the impression, coat the teeth with glycerin.

DUPLICATING RUBBER PLATES.

DR. W. E. BUCKMAN.

Bring the parts together and cement them; make a plaster cast; when it sets, remove the plate and remove the teeth from the plate by heating in a flame until they will come off easily. File the portion that held the pins until the pin marks are nearly obliterated; then set the teeth back in place and wax thicker where needed. Invest, heat the case and separate; the teeth will be found in the one-half and the broken plate in the other, which is easily removed preparatory to packing the rubber.

Before putting in the rubber, carve out the model at the back edge of the plate a sixty-fourth or a thirty-second of an inch, to be sure of a close fit at that point.

VULCANIZING WITHOUT A FLASK.

DR. B. T. RADCLIFF.

Items of Interest, February.

After the plaster is thoroughly dry, coat the models with the rubber dissolved in chloroform, where you wish to use the rubber, After the chloroform has evaporated, warm the rubber of the right size, and with a wet finger work it down over the center, holding up the rest of the rubber to exclude the air. "Build up" with warm strips, the same as with wax. In patch-work, if an upper set. dampen the palatal surface with water and fill to top of border with plaster, to prevent the plate springing. Cut away old rubber, leaving the surface rough where you wish to patch. Coat it with the solution and build up with rubber. Heat the teeth, and while hot, press thèm into their proper places, holding the thumb against the rubber on the palatal side, to prevent it moving inward. Hold them till cool, or dip them into water. With warm knife trim away the surplus rubber, incase in plaster and vulcanize.

POWDERED PUMICE FOR MOLDING.

Dr. F. A. Knowlton uses this material for molding purposes, with satisfaction.

TO IMPROVE THE APPEARANCE OF ARTIFICIAL TEETH.

DR. F. A. GREENE.

The appearance of artificial teeth in the mouth will be very much improved, especially by artificial light, by taking off the glassy surface with fine emory or sand paper.

TO PREVENT DARK JOINTS.

Dr. G. K. Hisey mixes silex and powdered zinc with a little watèr and places it in the joints.

A PRACTICAL CHEOPLASTIC PLATE.

DR. C. W. STAPLES.

Ohio Journal Dental Science, July.

Such a plate must be made so as to accommodate gum teeth as well as plain, without adding any extra risk of breaking. In the ordinary methods the full lower cases have been too heavy, and the gums cracked, either during construction or in after years by the softness of the metal allowing them to move slightly; this we overcome by using rubber attachments. Then in the case of lower partials, the patient was sure to bend and break the plate unless it was made thick and bungling; this we overcome by a wire spring of Dr. W. H. Dorrance invention.

Proceed as usual with impression; model may be poured of plaster, but plaster with asbestos or whiting is safe. To this model fit accurately a piece of piano-wire, No. 14, 16 standard gauge, along the arch, so as to leave the arch about oppoite the first molar; after fitting this wire to the arch bend each end inward at right angles with body of wire; then about one-fourth inch from first bend make a second by bending wires upward, forming an obtuse angle. This is done so that the wire will be held firmly in the plaster of the upper half of the flask. This done, take a file and make a notch on each side of wire in the first bend of each end; this is done so that the wire will break in the proper place, and easily, when wanted. Sandpaper the wire to remove all dirt from surface, and dip first into muriate of zinc, then into melted tin; this is done so that the metals used for plate will flow along and become attached to the wire. The wire prepared, cover the model to just the extent that you wish the plate to cover the ridge when done. It is now necessary to decide whether to use a solid plate of metal or a rubber attachment. In nearly all cases if full lower, and if partials with much absorption, I use the latter, and have selected such a partial for description.

Warm the tinned wire and press into place, and cover the scar with a fresh piece of wax, which is now ready to flask. For this, I find the Watt's flask most convenient, although the Westner is good and the one used in this case. In flasking, care must be used to have sufficient plaster under the ends of the wire to hold them firm and without breaking in the upper part of flask. With sharp knife make a groove around the edge of plate in upper part of flask

just where edge of rubber will finish to, and is done so as to furnish a more secure attachment for rubber and a larger surface of metal next to the mouth.

For a more secure attachment, especially in full cases, I make several pits about half inch deep in upper part of flask over the ridge. These can be made with an old excavator sharpened like a screw-driver. Now cut a gate from each angle; this I make ample, as it can do no harm and proves a great convenience.

The two halves of flask are now dried separately in a temperature that will not calcine the plaster; the oven of an ordinary heating stove (as Stewart, Mogie, etc.) is a convenient place. When a mirror held over the warm flask will not gather the slightest moisture they will do to pour and not until then.

When dry the surface of the model should be rubbed with a piece of base plate wax to smoothen the surface and also to act as a flux for metal. The mould should be warm and the metal but very little above melting point when pouring, and should be cooled slowly to obtain a smooth casting. After separating, the wire should be broken off with the finger. It will break just below the surface if the notches have been made as described. The small hole at each place where wire is broken is to be filled with some metal as that of which the plate is made, with a soldering copper (not tinned). To do this moisten the surface of plate about the hole with H Cl, or chloride of zinc, and place a piece of the metal over it and melt into place with warm copper. Now, with a file, smooth off plate in a rough form and fit to mouth; after fitting take the antagonism, using plate just made as base plate, then proceed as usual with rubber attachment. Should you wish to make a solid plate after fitting the wire, you would proceed as usual with cheoplastic plates, excepting that after the case is on the articulator, the wire is to be put in place before the teeth are ground.

Any of the alloys of tin in use may be used for construction of this plate. While I have tried them all, I like 15 parts silver to 85 of tin, although the addition of 3 per cent. of bismuth makes a good plate.

TAKING LOWER IMPRESSION OF WIDE JAW AND VERY SMALL MOUTH.

DR. I. DOUGLAS,

Dental Register, December.

With a pair of two-jointed, double-setting, inside pliers, I ascertained that a No. 3, S. S. White tray had to be spread to make it wide enough, and the mouth only about one inch and one-fourth across. The tray must be cut in two, and the impression taken in two sections, or made so afterward. Shaping a piece of wax to the upper surface of the handle of the tray, and letting it extend a little on to the tray proper, and using this for a pattern to make a mold, a piece of britannia was cast to fit the handle and tray. The handle itself was strengthened by adding solder to the underside. Four holes were then drilled through the new plate and tray handle, two on each side, and four guide-pins were fitted to the holes. The tray was next sawed in two through the entire handle, while the britannia plate was left in one piece, and served to hold the two pieces of the tray together and secure by the pins.

In taking the impression, the two halves of the tray were filled with plaster and introduced into the mouth separately; then locked together by the britannia plate and guide-pins, and pressed down to its place.

Some modeling composition was taken from a basin of hot water and fitted to the underside of the handle, and then cooled with a napkin wet in cold water. The plaster impression was raised from the jaw, and the britannia plate removed; leaving the modeling composition to hold the two sections of the tray together. A ribbon saw was next inserted between the two portions of the tray, and the plaster sawed part way and then broken and removed from the mouth in two parts. Thus a perfect model was obtained.

It was necessary to strengthen the wax trial-plate by three wires, one on either edge of the plate in addition to one on the lingual side of the ridge, just out of the way of the teeth, for the patient was obliged to put the plate into his mouth sidewise and then turn it around. The bite was secured by putting soft wax on the trial-plate. When the plate was ready to fit, in order to adjust the occlusion, a thin sheet of wax was pressed over the grinding surfaces of the side teeth, for the patient to bite on. When the occlu-

sion was nearly exact, the indications for its completion were obtained by placing a strip of carbon paper between the grinding surfaces while in the mouth.

RETARDING OR HASTENING SETTING OF PLASTER.

American Druggist.

TO MAKE PLASTER OF PARIS SET HARD.

Mix best plaster of paris with about 10 per cent. (more or less, according to effect ascertained by preliminary experiment) of very finely powdered marble (calcium carbonate.) Or add to it about 6 per cent. of powdered alum, or about the same amount of ammonium chloride, before mixing with water.

TO MAKE PLASTER SET SLOWER.

Mix it with 2 to 4 per cent. of powdered althæa root before adding the water. This not only retards the hardening of the plaster, but also enables it to be cut, filed, sawed and turned.

An addition of 8 per cent. of althæa powder retards the complete setting of the plaster for about one hour, so that the mass can be used for any purpose where it is to remain plastic during at least a portion of that time.

TAKING PLASTER IMPRESSIONS.

DR. PHILIP BETTS.

British Journal Dental Science.

First of all obtain an impression of the case in any of the compositions usually employed. Then cast the model, and dry and boil in wax. When cool, this model is employed to shape in "Godiva" or "Stent," an impression tray for taking the final working impression in plaster of paris. Wax may be mounted on the first model, so that the bite may be taken and the teeth selected at the same sitting as when the final impression is taken. The composition impression tray having been prepared and tried in the

mouth to prove its suitability to the case, two wine-glasses and a spoon will be required; one glass containing about two-thirds its complement of slightly warm water, plus as much common salt as would cover a sixpense, and the other containing the required amount of plaster of paris. When all is ready, the glass containing the plaster of paris should be emptied into the one containing the salt and water, when the excess water may be poured off into the empty glass. The plaster batter having been gently stirred up may be placed in the tray, and the whole then steadily pressed into its place in the mouth and held there until the plaster is hard enough to break with a clean fracture. Can scarcely indicate the precise moment at which either to introduce or withdraw the plaster, but a few trials will afford the necessary experience. The impression having been withdrawn from the mouth, and all fragments of plaster having been collected therefrom, those pieces which are required should be returned to their places on the impression tray and waxed in position. The impression is now to receive three or four coats of a thin alcoholic solution of shellac, care being taken that the one coat is dry before the next is added. When the last coat of shellac is quite dry, the impression should be brushed over with a film of oil, placed in water until quite saturated, and then cast in the usual way. Sufficient time having been allowed for the plaster to become quite hard, the model should be placed in hot water and the composition tray removed, when the plaster impression may be readily raised with the point of a knife from the face of the model. Should any part of the impression be inclined to stick to any part of the model, it may be loosened by holding the face of the model against the flame of a Bunsen burner for a few seconds. Should any part of the impression be particularly thick, it will be well to scrape it away until the shade of the shellac is visible before attempting its removal, otherwise some prominent part of the model may come away with it. As regards the plaster to be used, take the ordinary workshop plaster and pass it through a fine hair sieve to remove the coarser particles. No two lots of plaster behave quite the same. Make a few trials of each new lot before actual use. The water used for mixing the plaster should be slightly warm, for this condition serves two purposes; it causes the plaster to set quicker, and prevents the painful shock to sensitive teeth which would be produced by any cold application.

CAST TEETH FOR SHORT BITES.

DR. W. D. TICKNER.

Items of Interest, November.

In making a partial denture, when the space between molars and bicuspids of one maxillary and the opposing gums of the other is very narrow, fill one-half of a Weston flask with batter of plaster and whiting. When batter has set to about the consistency of dough, press into it artificial teeth as indicated. Remove teeth and fill pits with wax. Connect each pit with main canal by thin narrow line of wax. Rub the surface with dry whiting, then adjust the other half of flask and fill. When the plaster is hard, separate; remove wax. Melt sufficient of Weston's new metal as will fill the mould, and pour. When cold, remove the cusps and trim; spurring the under side and notching the edges so that the rubber will adhere to them firmly.

CLEANLINESS AND CAREFULNESS TO PREVENT DARK JOINTS.

DR. W. H. NEALL.

Dental Office and Laboratory, May.

The writer says any case can be turned out of the vulcanizer with clean joints, whether the fitting inside or outside is close or wide, by absolute cleanliness and carefulness in every detail. The vulcanizer, inside and out, the bolts, flasks, plaster and hands must be clean. Wax up the case without letting the spatula or wax touch the joints; place it in lower half of flask, trim and varnish; hold in water a few seconds, which permeates every joint; wipe the water from the varnished plaster and complete the investing. The plaster will follow the water into the joints. Separate by immersing in boiling water until thoroughly heated. Cut vents at every joint directly from the gum; cut others between these, and at the heel of the plate; as many as six. Remove wax and save if wanted for measuring the quantity of rubber. Wash out the little particles with boiling water poured in; drain the case and flow thin plaster in the inside joints, using a thin instrument to lead it in. For

packing use just the right quantity of rubber. [Dr. W. H. Richards has an article in this COMPENDIUM on measuring the rubber by the wax.—ED. COMPENDIUM.] Use small pieces around the pins and lay a piece over every joint. Do not have an excess pressing against the blocks; rather have it along the median line, so as to press the proper quantity towards the blocks. After closing the flasks boil in water five minutes and screw together; vulcanize at moderate heat. The writer assures perfect success if every detail is carried out.

Crown and Bridge Work.

CROWN AND BRIDGE WORK.

DR. F. A. PEESO.

International Dental Journal, February.

The first to be considered is the anchorage. If this is not sufficient, of course the whole piece is a failure, let the work be never so well done. It is impossible to lay down any rules concerning this, but I will mention a few cases where a serviceable bridge might be placed.

In putting in a full denture it is necessary to have at least four good teeth or roots to serve as abutments. If there are two canines, strong and firm, and two good, strong, solidly set molars, they will carry a bridge for a great many years.

In a case of this kind, the canines should be cut off and Richmond crowns used, and not half caps, as they are not suitable for permanent work. Where the incisors are lost and the canines are standing, often a lasting bridge may be placed, always supposing the teeth strong and healthy.

If the canines stand well apart, and the incisors can be placed nearly straight across the mouth, it will make a strong piece, but if the arch is narrow, and the incisors have to be placed on very much of a curve, it is running a great risk to trust to the canines alone to carry it, as the leverage would probably be so great as to loosen the teeth. Where the six anterior teeth are lost, it is well to give up all thought of a bridge and trust to a plate. In most cases a durable piece can be made running from the canine to the second molar, and sometimes even to the wisdom tooth. The two central incisor roots will carry the two laterals, and the lateral roots the centrals. A loose root does not necessarily preclude the idea of placing a crown. In a great many cases it will yield to treatment and become firm.

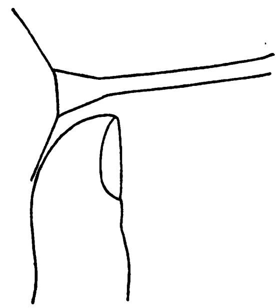
After being certain that the anchorage is all right, the most

important part remaining is the trimming of the teeth and roots. If this is not done properly the whole piece is unsatisfactory and may be considered a failure.

In trimming the teeth, the dentist should always have in mind what the shape of the tooth would be if cut across just below the margin of the gum. The swell should be entirely taken off to nearly one-sixteenth of an inch below the gum line; leaving the sides of the tooth parallel, or slightly larger at the neck, so that when the band is passed over it will hug the tooth closely and not impinge on the gum.

Take, for instance, a lower first molar. Looking at it from the buccal side, the swell is very great; starting from just below the gum, it swells out, until where it touches the adjoining teeth

FIG. 1.

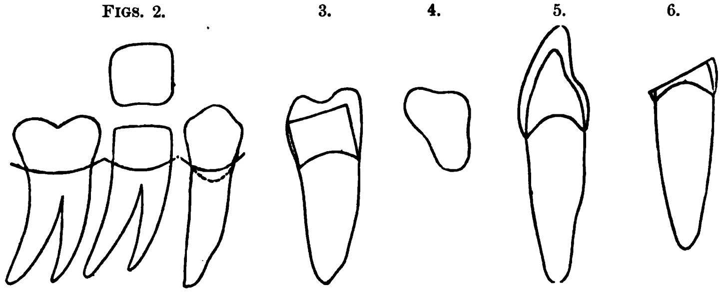


it is often from one-quarter to one-third wider than at the neck. Looking from the anterior surface, the swell is not nearly so great, while the masticating surface is oblong. After this tooth has been properly shaped it will be nearly square, with the corners rounded, being slightly narrower at the distal side than at the mesial, owing to the distal root being smaller, and there will be about one-sixteenth of an inch between it and the adjoining teeth. (Fig. 2.) In many instances, after the mesial and distal surfaces are trimmed, it will be necessary to cut only the lingual, as the tooth often leans in towards the tongue, and after this side is cut away the band will pass over the enamel at the buccal side and touch the tooth below the gum. (Fig. 3.) It is often very difficult to trim these teeth on all sides with such wheels as you can get. Probably the most difficult place in the mouth to reach is the anterior surface of the lower molars. If you will take a thin mounted corundum disk

and hold it over the spirit-lamp while the engine is running, and as the heat softens it a little press the edges outward, you will form a cup-shaped disk which will do the work nicely. (Fig. 1.) For the lingual and buccal surfaces a small cup-shaped corundum will answer—No. 11, S. S. White's corundums.

After an upper molar has been prepared, it will be found to be altogether different from the lower, being triangular in shape, with the base of the triangle at the buccal side and the apex at the palatal. (Fig. 4.) Of course this may vary at times, and the palatal root be as broad as the two buccal roots, but this is not often so. You will almost invariably find that this tooth has been trimmed about the same as a lower molar, without any regard to the shape of the roots, and that the band, while possibly fitting the

FIGS. 2. 3. 4. 5. 6.



tooth at the buccal side, is away from it at the palatal and impinges on the gum. In any of the posterior teeth it will be found that a great deal must be cut from the mesial and distal surfaces, but very little from the buccal and palatal or lingual. The cusps, too, should be ground away, especially where the tooth is to carry one end of a bridge, so as to allow a thick, strong metal cusp to be placed on the band, and so form a strong attachment for the rest of the piece.

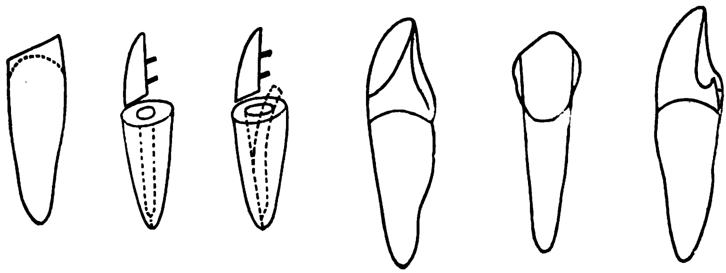
In making caps for any of these teeth, the band should hug the neck of the tooth tightly, and the contour should be restored till it touches the adjoining teeth, so as to leave no space where the food may find lodgment and annoy the patient.

After the tooth has been cut down to its proper level, if the enamel is taken off it will leave the root of the proper shape for the band to fit nicely, and it is very seldom that it will need any further trimming. (Figs. 5, 6, 7.) This will apply to any of the

anterior teeth, or to any tooth where a Richmond crown is to be placed.

The preparation of the canal, too, has a great deal to do with the durability of the work. It is the general practice to enlarge the canal without changing its direction at all. In most teeth, if this is done, it does not leave room in front of the pin to place the porcelain without grinding it away or grinding the pin, and thus weakening it. (Fig. 8.) At times the pin is ground entirely off, and the only attachment it has is to the thin floor of the cap. If, after having enlarged the canal, you will lean the reamer towards the palatal or lingual side of the root, thus sloping the canal in that direction, by bending the pin slightly it will leave plenty of room in front of it to place the facing without weakening it in the least by cutting. (Fig. 9.)

FIGS. 7. 8. 9. 10. 11. 12.



Another prolific cause of weakness is short and small pins. In opening the canal it is always well to ascertain the length of the root first by passing a very fine broach through the apical foramen. You then know just how far you can go, and can make the pin long enough and large enough to give all the strength required. There are very few teeth that will not take a pin at least three-eighths of an inch in length.

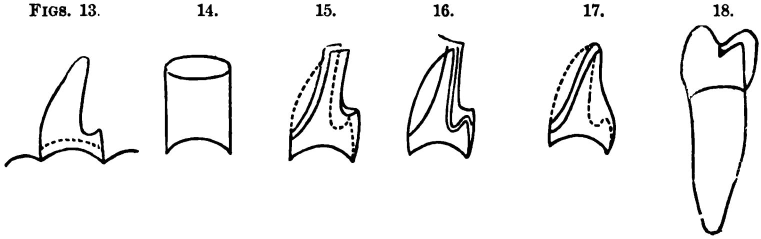
Half caps and shoes form very questionable anchorages. They certainly are not suitable for permanent work, as the cement is sure to wash out in time, the piece becomes loose and will have to be reset, and, where the other end is firmly fixed, it is painful and annoying to the patient to have it removed.

The strength and lasting qualities of the half cap depends perhaps more than any other on the proper shaping of the tooth. The usual method of trimming the cuspid is to straighten the sides

of the tooth and grind away the palatal surface, and here the work stops. The cap is then made and cemented in position. (Fig. 10.) A bridge anchored in this way cannot last, as the force exerted in mastication, is sure to loosen it by stretching the band of the half cap in front and forcing it inward over the basilar ridge. First to trim the sides so that they are nearly parallel. (Fig. 11.) The tooth may be a little wider at the cutting edge than at the neck, as the cap can be sprung over it. Then grind away the palatal surface until it is quite concave. The next cutting is the one on which the stability of the piece entirely depends, and that is the cutting of a groove longitudinally across the back of the tooth, just above the basilar ridge. (Fig. 12.) For this purpose a bur or small corundum wheel can be used.

For the benefit of any who may not have used the half cap, will explain how they are made. The impression should be taken

FIGS. 13. 14. 15. 16. 17. 18.

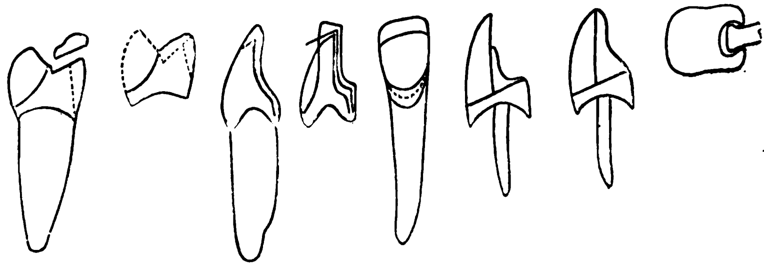


after the tooth has been prepared. After running the model and having it thoroughly dried, cut the plaster away from around the neck of the tooth to nearly one-sixteenth of an inch below the gum line. (Fig. 13.) Then give it several coats of thin sandarac varnish, and after this has dried the model will be hard, and you can proceed to make the cap. First make the band the full height of the tooth, and contour its edges so that it will touch the plaster all around. (Fig. 14.) Cut it out front and back so as to leave these surfaces of the tooth exposed, letting the edges of the band at the inner side extend a little beyond where the tooth has been cut away. (Fig. 15.) Next take a very thin piece of pure gold or platinum of the right width, let it pass over the basilar ridge inside the band. Burnish it carefully into the groove and up the back of the tooth, letting it extend over the cutting edge. (Fig. 16.) Then cover it well with hard wax, remove, invest in sand and plaster, and restore the contour with 18 or 20-carat solder.

(Fig. 17.) With a half cap made in this way there is very little strain on the band in front, and it makes no difference how much pressure is brought to bear, it cannot be forced back over the basilar ridge, and the pressure is directly downward or upward, and nearly over the centre of the tooth.

In the preparation of the bicuspid the same principle will apply. The sides should be made nearly parallel, and the swell should be taken off the inner side of the tooth, so that the band will pass over and touch the tooth all around below the gum. The inner cusp should then be ground off, cutting straight downward at the centre, and sloping it upward towards the point of the cusp. (Fig. 18.) In making the band it should be cut out at the buccal side and even with the top of the inner cusp, as it has been ground. (Fig. 19.) The cusp is made by fitting a small piece of platinum to the band after flowing over it coin, or the same

FIGS. 19. 20. 21. 22. 23. 24. 25. 26.



metal as the band, to the required thickness, and soldering it to its place (Figs. 19 and 20), and, as you will see, any pressure has a tendency to crowd the piece more firmly into position. (Fig. 20.)

The trimming of a tooth for a shoe should be the same as for a cuspid half cap, with the difference that the groove need not be so marked, and the cutting edge should be ground off sloping downward or upward towards the gum. (Fig. 21.) The ears of the cap should extend beyond the cutting edge as far as is necessary to restore the length of the tooth. (Fig. 22.) The thin metal over the back should be burnished carefully over the cutting edge, between the ears of the cap (Fig. 22), and this space filled with the same carat gold as the band. (Fig. 23.) It is well with any of the above to double the band in front, thus overcoming the danger of stretching, and making the piece more secure. In trimming these teeth the labial face should always be left intact.

The use of the spud, spur, or bar, as it is variously styled, is advisable in very few cases, and it is a question whether it is safe to rely on it any time. It should never be used unless it can be made large, and strongly dovetailed into the tooth (Fig. 24), and then only on very small bridges.

A great many crowns are used without bands, but they are certainly not so safe as a well-made Richmond crown, and should never be used in bridge-work. The cement is likely to wash from under them in time, and they are far more apt to loosen than where the root is properly banded. Then, too, the danger of the root becoming fractured is another argument against their use.

After the bridge or crown is completed and fitted in the mouth, the articulation must be corrected. It will be found in most cases where teeth have been out for some time that those in the opposite jaw have elongated, and have grown so far out that they may touch the gums where the teeth are lost. In such mouths it is impossible to do anything for the patient without first cutting these teeth to their proper level. This is usually a very painful operation for the patient to undergo, and some may object to having it done, but to secure good results and do your patients the greatest possible service it is absolutely necessary to grind them away until you can secure a normal articulation, and the patient will have to bear it.

BREAKING FACINGS.

It may be well to mention one other cause of trouble, and that is the breaking of facings. A great many times this is due to short backings, letting the porcelain extend away beyond the gold, and leaving the whole strain on the pins. (Fig. 25.) If you will let the backings extend to, or just beyond, the cutting edge of the tooth, and then flow solder well up to that point, it will make a stronger piece, as the force of the bite will come partly on the metal. (Fig. 26.)

CEMENTING.

The piece and teeth, or roots, should be as thoroughly dried as possible. Cement should be put well up into the canals and in all of the caps, and the bridge or crown forced quickly into position. It is well to use plenty of cement, and as the bridge is pushed to its place, the excess will be forced out around the edges of the cap.

It is the custom with some to drill holes in the cap to allow the surplus to escape, and then fill these holes with gold, but this a great mistake, as the caps should be perfectly tight, so as to force the cement to every part.

WORKING ON THE MODEL.

For this purpose the hardest plaster obtainable should be used. For all full gold or half caps, the work can be done better and much easier on the model than in the mouth, and certainly it is far more agreeable to the patient. Where you intend to put on a Richmond crown, with a part of the tooth cut below the gum, it is, perhaps, easier to fit the band on the root.

Where a cap for a Richmond crown is made on the root, if, after taking the impression, a little soft wax is flowed around the inside of the band and on the pin, it will not be necessary to run the model of sand and plaster, but plaster alone may be used. After the cast has become hard, the cap may be taken off with a pair of heated pliers, and the wax burned away. It may then be replaced, and when the crown is ready to invest for soldering, it can easily be removed without having to be cut out, and there will still remain a perfect model on which, if it should be required, another crown could be made.

A NEW PREPARATION OF GUTTA-PERCHA FOR SETTING CROWNS.

DR. WILLIAM H. ROLLINS.

International Dental Journal, April.

In setting crowns of porcelain with platinum pins extending into the roots, and for setting gold crowns and caps, a filling made of vermilion and gutta-percha is of service.

This is readily made by mixing together with heat and careful working one part of gutta-percha and three parts of vermilion. This combination resists the destructive action of the mouth much better than the usual combination of gutta-percha and oxide of zinc. For buccal cavities, where the ordinary gutta-percha filling softens on the surface, it is of value.

INLAYS, GOLD AND PORCELAIN.

DR. G. I. V. BROWN.

Dental Review, March.

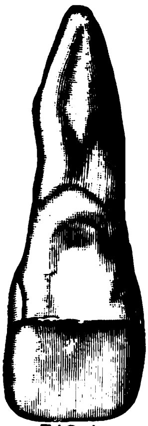


FIG. I.

We have in daily practice incisors from which some portion of the cutting edge has been lost by reason of an accidental blow, caries, erosion, or abrasion, or perhaps it may be necessary to lengthen one or more such teeth to make proper occlusions in lengthening the bite of a whole mouth.

In such cases a porcelain tip made from a plate-tooth, properly selected as to color, ground to fit the edge of the natural tooth in such manner as to give the proper outward appearance, a platinum pin fitted to extend up into the roots and attached to the porcelain tips, the palatal surfaces filled in to proper contour with backing, and solder or porcelain body baked upon them, the tooth cavities filled with gutta-percha, and the tips heated and pressed home as illustrated in Fig. 1 have given good satisfaction. This is a conservative operation much to be preferred to cutting off the whole crown down to the roots and crowning by any of the methods usually employed.

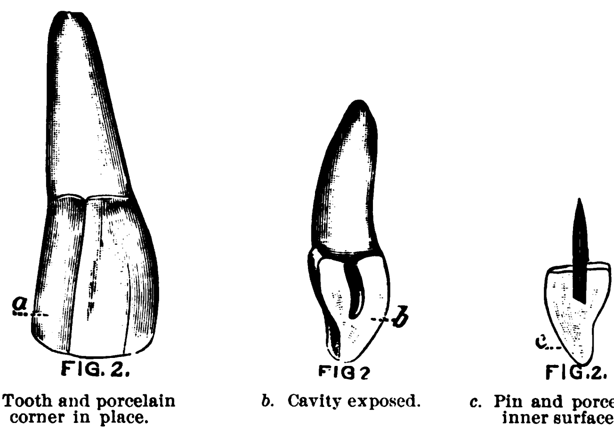


FIG. 2. FIG 2 FIG. 2.

a. Tooth and porcelain corner in place. *b.* Cavity exposed. *c.* Pin and porcelain inner surface.

Figure No. 2. *a.* *b.* *c.* represents what has proven of inestimable value in the restoration of proximal cavities in the anterior teeth where the destructive process has extended to the cutting edge, especially where the pulp has been devitalized and the remain-

ing tooth structure is so frail as to render the durability of a gold filling questionable. The result may be accomplished either by fitting a pin to extend up into the root and baking porcelain body in a matrix of platinum, burnished to fit the cavity and allowing

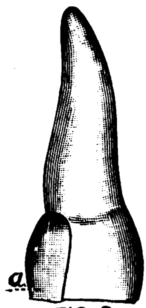


FIG. 3.

a. Front view.

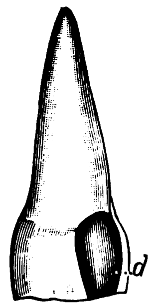


FIG. 3

b. Posterior aspect showing gold backing.

it to extend out to restore the contour, as shown in fig. 2 *c.*, or by grinding a portion of a plate to fit the required space, backing with gold and soldering porcelain, gold and pin together, as shown in fig. 3 *a. b.* The use of a pin gives sufficient security with gutta-percha lining the cavity into which the heated piece is pressed.

Three years ago two molars were treated from which gold crowns had to be removed by reason of the discharge about the

FIG. 5.

FIG. 5

FIG. 5

a. Gold top in place.
b. Cavity exposed.
c. Gold top with button.

Fastening in view.

necks of the teeth, and it was found to be of course impossible to check the pyorrhœa so long as the gold bands extended under the gums and afforded a lodging place for irritating influences. Gold tips were put on as shown in fig. No. 5 *a* of swaged gold plate filled

with solder, and a button as in fig 5 *c* soldered upon the bottom of it, and the teeth restored to a state of usefulness which recent examination gives every reason to expect will continue.

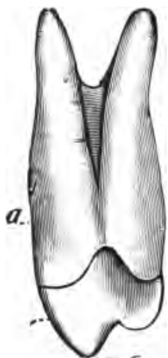


FIG. 6

a. Natural Crown.
b. Top in place. Made either of gold or porcelain.

Fig. 6 is the counterpart of a bicuspid tooth which having lost part of the crown and both proximal surfaces; these have been restored with the top of a porcelain rubber tooth ground to fit and porcelain body baked around a pin which extends up into the root canals, and baked in the manner of the foregoing cases to fit the concavity of the remaining portion of the natural tooth and at the same time attach firmly the pin and ground top.

This is inserted with gutta-percha, and is more satisfactory than the ordinary band crown. If the pulp of such a tooth be alive, and the opportunity for gold filling still questionable, swage a hollow tip of gold plate, allow two flaps of gold to extend down to cover the proximal surface, fill the cavity in the tooth with copper amalgam, and press the top into place. Those three last methods are useful under almost every requirement of an abraded crown and for lengthening the bite with molars and bicuspids.

For large cavities extending beyond the gum line in molars, and for bicuspids where proximal and masticating surfaces may both be

FIG. 7.

a. Tooth with gold inlay in place.

FIG. 7.

b. Tooth showing cavity.

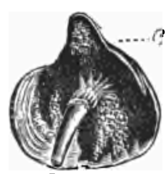


FIG 7.

c. Inlay with inner surface and pin in view.

involved and the remaining tooth walls not to be depended on, No. 30 gold plate is swaged to fit the outline of the cavity and also supply the lost contour held in place by a platinum pin or pins that may be allowed to extend up into the root canals if the pulp be dead as in Fig. 7.

Or where this is not practicable, a porcelain piece may be baked to fit the cavity just as was done in the other cases and

allowed to extend out to complete the proper outline of the tooth surface, deep grooves may be cut on the sides of the inlay, also deep undercuts into the tooth walls which are coated with amalgam, and the porcelain tapped into place with light blows from a mallet.

The excess of mercury is thus squeezed out of it, the danger of shrinkage reduced to a minimum, the contour bolder and sharper than amalgam alone, and the copper amalgam is left undisturbed to protect and make full use of its antiseptic properties at the margin of the cavity. (See Fig. 8.)

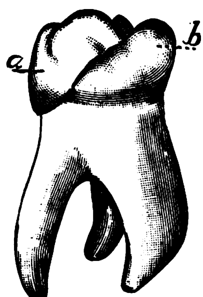


FIG. 8.

a. Porcelain filling.

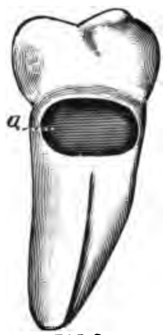


FIG. 9.

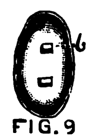


FIG. 9

b. Inside of gold showing the fastening.

Cavities on the labial and buccal surfaces may be quite simply covered as shown in Fig. 9, by fitting a little piece of gold plate to the outline of the cavity and holding it in place in the gutta-percha filling with little stays that have been soldered on its inner surface for that purpose. It is hardly necessary to explain that such a gold covering as shown will protect it from wearing out, nor is it necessary to add that it can be easily and quickly made.

SECTION BRIDGE.

DR. DARBY.

International Dental Journal, February.

Two molars and a bicuspid had been lost from the inferior jaw. The wisdom tooth, which was to form one of the abutments, had tipped very much forward, but was firmly fixed in the jaw. The first bicuspid, which was to be capped and form the other abut-

ment, had tipped backward. It will, therefore, be seen that inasmuch as the space near the gum was much larger than between the ends of the teeth, it would be impossible to put the bridge in place if made in one piece. It was, therefore, decided to make the teeth of gold (hollow gold crowns.) This was done, and, when finished, the piece was divided between the caps covering the bicuspid and molar crown, leaving those two intact. The three hollow crowns were then filled with rubber and vulcanized. Two large screws were put through gold, rubber, and all. The pieces were inserted separately, and when the cement was in the act of setting, the two screws were driven home, bringing the two halves firmly together.

CANTILEVER BRIDGE.

DR. HEAD.

International Dental Journal, February.

A second lower bicuspid was to be replaced. The lower sixth-year molar was covered with a Richmond crown, to which was soldered a gold second bicuspid. From this gold tooth a spur rested on a Richmond crown, previously placed on the first bicuspid. This has proved to be not only strong but cleanly.

PLASTER MODEL FOR FITTING BANDS.

Dental Cosmos, April.

Dr. Chas. J. Esseg says the most accurate way to fit a band to a root, after the root is trimmed to suit, is to take an impression, make a plaster model and work on that. He says if it is made of good plaster and thoroughly dried, then well saturated with thin sandarac varnish, and allowed to dry again, you will have a model that is hard enough to work on without injury; but precision in fitting the cap can, in many cases, only be obtained by fitting the band as well as you can, on the model; soldering it together, or making the ring first before putting the floor on, and then fitting it upon the root itself.

ALL PORCELAIN CROWN.

DR. F. BLIVEN.

Dental Cosmos, April.

Prepare the root like a truncated cone, concaving the labial surface; then prepare a platinum cornucopia, introduce the pivot at the apex, trimming the platinum form so that it will extend slightly under the margin of the gum, and burnish to place. Upon this form construct an all-porcelain crown similar to thickened enamel, using a porcelain facing.

COPPER CEMENT FOR SETTING CROWNS.

DR. W. B. AMES.

Dental Cosmos, May.

The black oxide of copper mixed with phosphoric acid and water forms a cement of sufficient hardness and stability to give promise of good results; the only objection is its jet-black color. A larger proportion of powder may be used in mixing with the phosphoric acid than is used in zinc cements. It crystallizes very slowly when kept cool, but immediately sets when warmed. This is a valuable property when used in bridge work. This material possesses a flinty hardness not met with in other cements. It does not stain the tooth if the oxide contains no free copper. During crystallization phosphate of copper is formed, which is a powerful antiseptic.

TELESCOPE CROWN FOR RETAINING ARTIFICIAL DENTURE.

DR. J. S. THOMPSON.

Dental Register, October.

Gold crowns are fitted and cemented to the teeth to be used for anchorage, a plaster impression is taken, around which a plaster rim is made sufficiently deep to give more body to the metal cast, if necessary. The impression is dried thoroughly and a model cast of pure block tin. Around the teeth on the model, corresponding

to the crowned teeth in the mouth, gold bands are fitted by bringing the metal together with pliers, then bending the ends back in opposite directions and soldering at the point of contact. The ends bent back are for the rubber attachment. Make a vent through the impression and cup to allow air or steam to escape, thus preventing bubbles in the metal model. This is made with a thin saw.

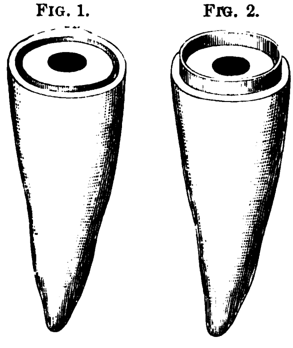
JENNINGS METHOD OF CROWNING.

DR. D. R. JENNINGS.

Dental Cosmos, April.

Dr. J. W. Vandoorn quotes Dr. Jennings as follows: Prepare the root, as usual, leveling the face of it even with or slightly below the gum. With the Gates-Glidden drills, sufficiently enlarge the canal. Then, with a trephine of proper size, (those with Dr. Younger's set of implantation instruments will do for most cases), sink a groove between the canal and periphery of

FIG. 1. FIG. 2.



the root. Have the trephine large enough to bring the groove nearer the periphery than the canal (Fig. 1). Sink the groove from a thirty-second to a sixteenth of an inch.

Now, on a mandrel of exactly the same size as the trephine, fashion a band, preferably of platinum, although gold will answer, sufficiently wide to be set in this groove and project slightly, say a sixteenth of an inch, above the surface (Fig. 2). Solder the band and set with thin cement in the groove. The projecting part will enter the hollow space of the crown. Now, set the crown in the usual manner with the cement, amalgam.

RESTORING A FRACTURED NATURAL CROWN.

DR. O. FERGUSON.

Dental Cosmos, May.

A boy, in collision with a school mate, had the left upper central incisor crown broken two-thirds off. Gas was given, the nerve removed, the apex of the root filled. A T post was constructed, a hole made in the detached crown as deep as safety would allow, the T pin was cemented in and the crown with pin in it was set with cement in position.

TO DRILL OR ENLARGE HOLES IN PIVOT CROWNS.

Dominion Dental Journal, March.

Dr. D. V. Beacock uses a copper mandrel in engine with corundum powder and glycerine.

TO ADJUST LOGAN AND SIMILAR CLASSES OF CROWNS.

DR. E. C. KIRK.

Dental Cosmos, October.

The author says he has found the following method for the adjustment of Logan and similar classes of crowns extremely satisfactory in cases where there has been much loss of root structure through the action of caries in the pulp-canal, resulting in a large funnel-shaped opening with more or less weakened root-walls.

After preparing the canal by removing the softened structure, filling the apex, and making suitable undercuts or roughness within the canal, the latter is filled flush with its orifice with a good grade of copper amalgam softened to a plastic, buttery condition. The apical end of the tooth-crown pin is sharpened to a point or hatchet-edge, as may be most expedient, and placed against the amalgam surface in the root-opening. A suitable point, mounted in the Bonwill mechanical mallet, is held in contact with the mor-

sal* surface of the crown, which is driven to place in close contact with the root by blows rapidly delivered from the mallet. All excess of copper amalgam is by this means driven out between the surfaces of contact of the crown and root in precisely the same manner as occurs in the use of oxyphosphate. The point used in the mallet for driving the crown to its seat is best improvised from a porte polisher armed with a hickory point, the use of which avoids chipping the porcelain. An excess of copper amalgam should be used, in order to fill all interstices. This method, involving the use of copper amalgam, is advocated only in the class of cases described, and possesses the advantages of giving complete support to the root, great strength of the material employed, and its insolubility. Other amalgams experimented with for this purpose have not been so satisfactory, because of their lack of plasticity and flowing quality which characterizes the copper amalgam when subjected to the rapid, vibratory, percussive force of the mechanical-mallet blow, which for this purpose should be considerably increased in intensity beyond that ordinarily used for filling-operations.

GLASS INLAYED AMALGAM FILLING.

DR. W. D. MILLER.

Dental Cosmos, July.

The buccal surface of a bicuspid was built up with amalgam, after it had become hard, in that part of it which showed from the front, a box shape cavity with rounded corners was made, an impression of the cavity was made by pressing into it a piece of No. 30 platinum foil, in which a glass inlay was made by fusing glass, which was cemented into the cavity in the amalgam filling.

TELESCOPE CROWN FOR ATTACHING ARTIFICIAL DENTURE.

DR. H. E. BEACH.

Fit a gold band to the tooth to which the plate is to be anchored, remove it and fill with quick setting plaster. Make

* The author uses the word "morsal" for grinding or masticating surface.

with number 40 tin foil an exact pattern for the telescoping band, make by the pattern the band, which will fit the first band perfectly. To the telescope band solder a lug, to which the plate is to be attached. Cement the first band to the tooth, place on the second band and take an impression which brings it with it, run a model and mount the teeth.

TO CROWN WHERE PIN IS BROKEN IN THE ROOT.

DR. W. MITCHELL.

Dental Review, November.

Grind pin and root off to a common level, then with a retaining point drill holes to the required depth around and parallel to the pin, connect these with a fine fissure bur, then fit a tube of suitable metal, German silver preferred, and proceed to completion as if the tube was the pin. This very materially simplifies an otherwise difficult operation.

FITTING BANDS.

DR. W. C. BARRETT.

Dental Practitioner and Advertiser, January.

A strip of gold, the proper length and width, is cut and annealed to perfect softness. It is then, with pliers, approximately fitted about the root, and a strong waxed ligature wound about it —usually twice—with a single surgeons' knot placed in it. While the assistant holds the band in place by her finger upon the top of it, the ligature is firmly drawn up. The cervical edge of the band is carefully burnished into place, and the overlapping end pressed down. The ligature is again and again drawn up, until the band is perfect in its adaptation. Then it is finally tied, the band slipped off, grasped by a pair of delicate pliers at the lap, a bit of solder placed on the inside, and it is held in the flame until soldered. The ligature is left to burn off in the flame.

The adapting of the cervical edge of the band to the festoon

of the gum may be partially done before the ligature is placed about it, or it may be entirely left until after the soldering is done, according to the necessities of the case.

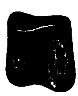
There is nothing better for ligatures than three-cord, linen machine thread, about No. 30, such as is sold for shoemakers' use. It may be obtained at shoemakers' outfitting establishments.

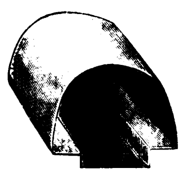
ENAMELING GOLD CROWNS.

DR. GEO. EVANS.

Dental Cosmos, November.

After the gold crown is made and fitted to the tooth in the mouth, the sides properly stiffened, the cusps or incisive edge strengthened, it is boiled in acid and then adjusted in the mouth, and the portion of the labial section which is exposed is outlined on the surface of the gold. The crown is then removed, the marked





area ground quite thin, and then perforated with a spear-pointed drill. The crown is again adjusted in the mouth, and the thinned labial section depressed to make all the room required for the inlay. The crown is then removed, and glass filling-material of the proper shade is mixed with water to the consistence of paste, a small portion of which is spread over the depressed surface of gold. The surplus moisture is then extracted with a napkin, and any dry particles of the material which may have fallen on the gold removed with a dry camel's-hair brush. The crown is then placed with the enamel upward in a small platinum muffle having a depression in its base to hold the crown steadily. The inside of the muffle is coated with whiting. The muffle is then placed on a charcoal soldering-block, and gradually heated up with a gas blow-pipe, blowing the flame against the closed end. A light red heat will fuse the enamel. The crown is then removed, sufficient enamel

added to give proper form to the part, and the fusing repeated. The surface of the enamel is then ground level and smooth, the edges finished, and the dust removed, after which any pits or inequalities are filled in, the surface being coated by means of a brush with enamel material mixed quite thin, and the fusing again repeated, the heat being carried to a higher point than at the previous fusings. The result is a dense, smooth inlay of enamel.

The enamel is applied in successive layers, and the color is very well controlled, though not perfectly; but the result is not so objectionable in the mouth as a gold crown or a discolored tooth.

TO RESTORE PORCELAIN FACINGS.

DR. W. MITCHELL.

Dental Review, November.

Cut two parallel vertical slots in the backing, to allow the pins of new tooth to slide into, leaving the pins so that they protrude as far through the backing as possible, then fit and burnish to place a piece of thin platinum over the original backing on the palatal or lingual side. This fitting must be done very neatly, carrying the new backing just under the gum margin. When this is done a drop of wax will fasten the pins to this casing, remove very carefully, and when investing, see that the casing is perfectly filled to exclude borax or solder, with which the pins can be nicely flushed, finish in the usual way; a small amount of quick-setting cement is all that is required in the final adjustment. If a shoulder can be left to receive the impact of the antagonizing teeth, so much the better.

TO BAND BADLY BROKEN DOWN ROOTS.

DR. L. L. BARBER.

Take a narrow piece of platinum, 36 gauge, burnish it under the gum to perfectly fit the root, remove and solder, place again on the root and fill with either mouldine or plaster, take an impression with band in position, pour with Melott's metal and to the platinum band fit and solder a gold band.

MANIPULATING GLASS INLAYS.

DR. D. GENESE.

Ohio Journal Dental Science, January.

It is difficult to keep the gold matrix from warping. To avoid this, press into the cavity No. 30 foil (not 60, as it leaves too much space), with cotton rolled tightly on a dull pointed broach, using two—one to steady the base, the other to work it into place; leave plenty overlap; then remove and fill the impression with soft wax, and trim the gold with care to leave a small overlap; replace in cavity, warm slightly, and press thoroughly into position; cool this, remove and invest very lightly in Teague's compound. You then have a true matrix to fuse the glass into.

As we receive it from the packages, it is very likely to burn and the color out. To overcome this, burn the color into spar; grind mix with the glass; this gives a higher grade and more tooth-like substance than glass alone, with a fixed color; then, if a low fusing point is desired, add potassa to the desired quantity. One thing must not be lost sight of, that is, pressure is required upon the inlay until the cement is thoroughly set, or it will change the position of the inlay. After the inlay is burned full enough, a thin overlap or edge will be seen; if this is not burred, the edges will not join perfectly. A fine glass disk run round the edge will smooth all this off, leaving a true face. If a contour is desired, a matrix may be made with gold foil built to form and invested in Teague's compound to keep it in form, leaving an opening to put in the powder.

In building large fillings, do not trust them to hold in place without fastening; when the inlay of gold and wax is removed, get platina pins from an old tooth, point them and press in position from the under side, letting the rivet head be as close as possible to the base, as more room is required than the cavity permits and must afterwards be deepened in the same direction as the pins are placed.

If the cavity is shallow, the under side must be roughened, cover the upper surface with wax and subject the inlay to fumes of hydrofluoric acid, which will give a good surface for holding to the cement. All inlays should be tried in, waxed into position and finally fitted with glass paper disks or diamond, as any attempt to trim on them after cementing may result in loosening from the

cavity; but when once cemented well in, with a good match in color, they are the best fillings to imitate nature.

To fuse them requires a little stronger heat than when burnt on the gold alone. Over a true bunsen burner fix platina gauze on a sliding bar with a set screw; by using this, complete control of the flame is obtained and the inlay kept exactly at the desired point of the flame, leaving both hands at liberty and complete control of the work. The gauze is milled into a rim of platina, offering no impediment to the heat reaching the work. A good result is obtained by making the first burning of a darker color and finishing with a lighter.

Always have plenty of space for approximate contours and test the articulation before cementing, waxing the inlay in and grinding any point of contact that might displace the inlay; steam or burn off any wax, and dry in alcohol.

REPLACING PORCELAIN FACINGS.

DR. E. B. WHITE.

International Dental Journal, May.

After a suitable facing has been selected, drill a hole through the bridge or crown and enlarge it with a small fissure-bur to a horizontal slot of sufficient width and length to admit of the pins on facing and in proper position to allow the facing to be fitted to place. After grinding the facing to fit, bend the ends of the pins together and solder, forming a loop of sufficient length to reach nearly through or to within about a line of the inner surface of the gold. Then, with a fissure-bur, make a groove on the inner surface of the gold, slightly larger at the upper than at the lower end, at right angles with and across the centre of the slot of proper depth to insert a pin through the loop on facing. Make a tapering pin to fit the groove, and after filling the slot and groove and covering the anterior surface of the gold—which now serves as the backing to the porcelain—with creamy cement, place the facing in position and insert the pin in the groove and loop with force enough to make it tight and the facing solid. After the cement solidifies, grind the pin even with the gold and polish.

TO WELD GOLD BANDS.

DR. G. W. MELOTTE.

Ohio Journal Dental Science, March.

To weld a gold band let the edges lap bringing them into perfect co-adaptation, apply creamy borax to the parts to be united, then with a flowing or soft flame of the blow-pipe bring the gold to a perfect redness when a concentration of the flame will cause a slight fusion of the surfaces, thereby welding. The author says it requires some practice to be able to do this well.

GOLD CROWN WITH PERFECT ARTICULATION.

DR. L. C. BRYAN.

International Dental Journal, May.

The articulated models being ready, the plaster at the gum is cut away around the root to the depth it is desired to fit the band below the gum margin. The band is made and adjusted to the model as high as the bite will allow, filed flat on its upper surface with a broad file, and filled in with modelling composition. The band and its composition filling may now be tried in the mouth, if convenient, and the bite taken in this way or the crown be finished on the models. In the latter case, with the ring and its soft composition in place on the bite, model in the articulator. The models are closed and the antagonizing tooth or teeth pressed into the composition to indicate the bite. The composition is then artistically carved away to represent the desired masticating surface with its sulci and cusps, care being taken to have the surface of the carved composition-crown just so far removed from the antagonizing tooth as the thickness of the gold plate used for the surface cap. An impression of this composition crown-cap is now taken in mouldine, which is simply a kind of artist's clay mixed with glycerine. The fusible metal accompanying the mouldine is fused in a spoon over a gas or spirit lamp, and is poured into the clay impression. This model represents the free edge of the ring and the carved surface of the desired crown. A sheet of crown or pure gold is now laid on a block of lead and this metal die ham-

mered into it until the desired cusps are formed. This is now trimmed and the resulting cap fitted on the band over the composition and a good joint secured. The band, cap, and composition are now removed and bound solidly with fine iron binding-wire. The composition being removed from the ring, the band and cap are soldered firmly together, the cusps in the cap being filled level full of solder to give strength and durability to the crown's masticating surface.

ADAPTING PORCELAIN CROWNS.

DR. J. A. DUNN

Says place a piece of articulating or carbon paper between the crown and the end of the root and press the crown to place; the carbon mark made on the crown will show where to grind.

CROWN AND BAND GOLD AND SOLDERS.

DR. J. J. R. PATRICK.

The choice of material from which a crown or band is constructed is of equal importance with the manner of adjustment, for, if the metal is refractory or too pliable, our success will fall short of our expectations; stability and adaptability combined are the properties required in the metals used for bands and crowns, and these properties are obtained in the following formulæ:

CROWN GOLD.

Pure gold ---------------------- 15 parts
Platinum ---------------------- 1 part
Cyanide potassium, 5 parts fused in a coke fire for 30 minutes at least.

BAND GOLD.

Pure gold ---------------------- 1 part
Gold coin ---------------------- 1 part fused

NO. 1 SOLDER.

Band gold	89 parts
Pure silver	7 parts
Pure copper	4 parts
Borax	10 parts fused

NO. 2 SOLDER.

Solder No. 1	89 parts
Pure silver	7 parts
Pure copper	4 parts
Borax	10 parts fused

The formulæ of alloys here given for gold solder will be found to contain all the following properties in a high degree:

Two surfaces of gold are caused to unite with solder, partly by cohesive force and partly by chemical attraction, and it follows that the solder used should not only be more fusible, but should have a strong affinity for the gold without impairing its natural qualities. For this reason, all gold solder should be made from the gold that it is to be used with.

When gold solder is used to unite two surfaces of gold that are expected to stand much strain, it is a matter of first importance that the solder should be as near the quality of the gold as possible. No baser metal than copper should enter into its composition. The solder should be as malleable and as ductile as the gold that is soldered, and, when polished, be the same color as the gold. These separate combinations of metals are rolled into plate the thickness of No. 29 or 30, American standard gauge, and, after annealing, are ready for use.

HERMETICAL JOINT BETWEEN GOLD AND PORCELAIN.

DR. J. G. HOLLINGSWORTH.

Take pure gold 32 gauge, or thinner, and back up the tooth so that the gold will cover the cervical part of the tooth and burnish it completely over that portion, put the tooth and cap in proper position and invest as usual. The solder will completely fill the space between the tooth and band or cap.

TO FILL GOLD CROWNS WITH LOWER CARAT SOLDER.

DR. W. E. BUCKMAN.

Gold crowns can be filled with a lower carat of solder without melting the previous soldering, by painting the outside with whiting and water, and holding the crown in a lamp flame till the added solder melts.

TO MEASURE TOOTH FOR BAND.

Items of Interest, September.

Dr. J. A. Robinson, in using wire for the purpose, twists it with a watchmaker's sliding-pin vise. The back teeth are as easily measured as the front.

SHELLAC PORCELAIN CROWNS BEFORE INVESTING.

Ohio Journal Dental Science.

Dr. Melotte coats porcelain crowns with shellac, before investing them for soldering. (Thick shellac varnish will do.) He says the shellac by carbonating, protects the surface of the tooth under the great heat.

TO REPLACE BROKEN BRIDGE TOOTH.

DR. J. A. ROBINSON.

Items of Interest, September.

If you do not wish to remove the bridge, select a tooth that will not quite reach to the old backing; take a strip of very thin platinum and wide enough for a backing, and leave the ends long crosswise, and flow gold over one side, and back and solder to the pins; square the old backing that is on the bridge, put the tooth in place and bring the long ends together round the old backing; remove the tooth and fill the slot with yellow ochre, to keep the

solder out, and solder the band together; this will leave a pocket to receive the old backing that is on the bridge, and fasten it in place with amalgam. The object of flowing gold over the platinum is so the amalgam will unite with it, as it will not unite with platinum.

GOLD CAPPED BRIDGE TEETH.

DR. J. A. ROBINSON.

Items of Interest, September.

It will often be a cause of disappointment to any dentist who undertakes to do crown- or bridge-work with the porcelain facings, without the protection of gold to prevent their breaking; to do this, fit the teeth a little short of articulation, square the ends or cutting edges, back them with thin platinum, bend the pins and do not let the platinum come over the end of the tooth; now take a piece of gold plate, twenty in thickness and large enough to cover the end of the tooth, and butt it up to the end of the backing, wax it in place, bed it in plaster, and solder as is usually done in backing a tooth.

SHOEING OR CAPPING TEETH.

DR. LEVI L. HOWELL.

International Dental Journal, December.

Dr. E. C. Blaisdell reports Dr. Howell's method as follows:

Drill two retaining-holes 3-32 of an inch in depth, each side of the nerve, with a No. 1 round bur. Be sure that the holes are parallel. Take a piece of platinum and iridium round wire, five inches long, just a trifle smaller gauge than the bur; place it in a jeweler's hand-vise, allowing the wire to protrude three inches; file a sharp point on the wire, try the wire in one hole, and see that it goes in and out easily.

Take a piece of pure gold plate, No. 32 gauge; cut a piece a trifle larger than the tooth surface you wish to shoe or cap; anneal this well; place it over the tooth, and with a very sharp-pointed instrument feel for and locate the hole you have prepared your wire

for; when found, just puncture the gold. Push the wire to the bottom of the hole; if the wire is of right size, the gold will lock around the wire, and when it is removed the gold plate will come away with it. Drop a trifle of Parr's flux around the wire on the surface to be built up.

Take as small a piece of eighteen-carat solder as you can cut, and place it alongside of the wire on the plate; hold this over a small alcohol flame, and solder; place it on the tooth, and gently burnish the gold to its place. When you cut the first wire to free the plate, be sure and leave it projecting as far as you wish to build up.

Place the plate on the tooth, and proceed with the second pin the same as the first. If the holes are parallel, the plate will come away attached to the wire. Solder this pin the same as the other.

Do not cut the wire; place the plate on the tooth, and burnish until it fits perfectly. Add a thin film of gutta-percha on the side of the plate that comes in contact with the tooth; warm slightly; place the plate back, and burnish again. This gives a perfect impression of the surface to be covered. Trim the plate of its overhanging edge by the marking of the gutta-percha; remove the gutta-percha, anneal and burnish. You can now see that the plate fits every part of tooth surface.

Drop a morsel of Parr's flux on the surface to be built up; place a piece of eighteen-carat solder between the two pins; hold over the lamp till the solder runs; repeat this till you have built the plate up as far as you wish. The solder will always run to the top of the first pin.

Clean out with muriatic acid; cut the second pin off; dry the tooth, and cement in place; when set, finish with sand-paper disks, stones, files, or whatever method is suggested.

By this plan we save much pain and time, producing a shoe that will stand the wear better than the best of cohesive gold work.

CUTTLE-FISH BONE FOR CASTING DIES.

It is said that beautiful dies may be made by pressing the cusps of a tooth into a piece of the bone and placing around the impression a piece of brass tubing into which the metal is poured.

HOLLOW CAST GOLD INLAYS.

DR. S. F. GILMORE.

Items of Interest, September.

Take an impression of the cavity, by pressing in a thin piece of platinum, press into this, while in the cavity a piece of hard wax, insert a pointed instrument in the wax and carefully lift the whole thing out, invest, melt wax out, mix a small quantity of investment and build a cone in the mold, melt in small pieces of gold till the mold is full.

BAND ATTACHMENTS.

DR. GRANT MITCHELL.

When a bridge-piece is to be attached to an anterior tooth, the crown of which is so sound that excision and crowning are not justifiable, make a band as described in the accompanying illustration:

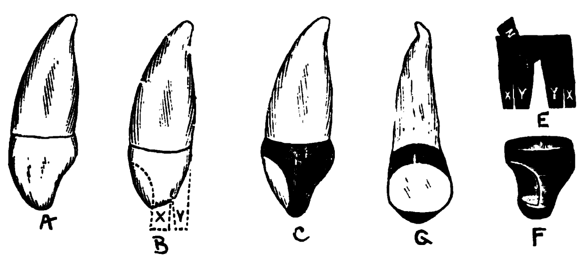


Figure A represents a cuspid to which one end of the piece is to be anchored. B the same with cusp squared, and sides ground, to receive the band. The dotted lines representing the band fitted at the neck of the tooth. The labial side cut out and the sides and back extending so far below the cutting edge that when the ends XX (Fig. E) are bent in, they will exactly meet at G.

Figure E shows the palatal side of the band properly cut for correct adaptation. The ends XX are gently malleted to position, using long handle plugger No. 304 and lead mallet. YY are then bent and malleted forward to overlap the ends XX, and Z to overlap all.

The band is now carefully removed and larger pieces of 20 K.

gold solder are placed over the joints on the inner side and fused in the flame of a spirit lamp, the solder sinking and leaving the inner surface of the band comparatively smooth. Contour the outside with a small, fine corundum wheel, and you will have a beautiful shell or semi-cap shown at Figs. F, C and G, useful alike on incisors or cuspids.

In preparing the tooth, grind cusp and sides, part way up, square. Cut out labial side of band so as to leave the ends XX extend slightly forward of the labio-cutting corners. Split the band between X and Y at the palato-cutting corners, and a trifle above the end of the tooth. Make the "V," at the back, full wide, because the flap Z will cover any space.

BRIDGE WITH LOGAN CROWNS.

DR. S. W. LAKIN.

The cut represents a bridge between second molar and first bicuspid. Make gold crowns for molar and bicuspid. (Fig. 1. a. d.) Select Logan crowns for b. c. Take a piece of gold plate 27 or 28 gauge, and make diaphragm or bottom, for each, by punch-

Fig. 1.

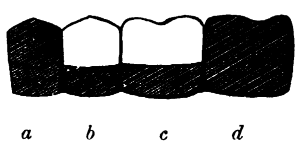
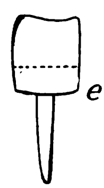


Fig. 2.



ing a hole for the pin of the crown to pass through, burnish the gold to the end of the crown and trim it to conform to the shape of it. E. Fig. 2 shows the diaphragm in place. Band the crown to the dotted line, (Fig. 2). Bring the edge flush with the diaphragm, cut away the metal pin, place the gold and Logan crowns in position, wax together (Ideal base plate melted on a spatula is excellent). Remove and invest in two parts marble dust and one of plaster, bring the investment up to the bands, dry well and solder. Flow the solder over the diaphragm, connecting the bands at the bottom and on the inside.

BRIDGE REPAIRED IN THE MOUTH WITH SOFT SOLDER.

DR. W. H. TRUEMAN.

Dental Office and Laboratory, January.

Having scraped, brightened and cleaned the parts thoroughly, he protected the lips and gums with a wet napkin, and with the assistance of office boy, who held and managed a small gas jet of English manufacture (designed for waxing up rubber sets), he heated a small soldering iron close to the patient's mouth, and was enabled to flow the solder sufficiently smooth to unite the broken bridge and tooth connected with it, and make a quite firm and strong job. This was done with comparatively little discomfort to the patient.

MAKING CROWNS WITH PERFECT ARTICULATION.

DR. J. G. FIFE.

Texas Dental Jcurnal, July.

The cap of a crown should be made to articulate perfectly as do the natural teeth in a regular, well articulated set. For the bicuspids where the articulation is normal, swage a cap from S. S. White's die plate and then make any necessary alterations with a pair of contouring pliers. The molars though, being more difficult of access and having broader grinding surfaces, and a greater number of cusps, render the process by this method both difficult and uncertain, and is at best principally guess work. Prepare the tooth and fit the band in the usual manner, getting plenty of space for a good thick cap if it is possible to do so. The cap end of the band should be made level with the tooth by means of a flat file, or the face of a corundum wheel.

Place band in position upon the tooth, and take impression and bite at the same time with modelling compound. Attach this, containing band to a small crown articulator, pouring the crown side with Teague's Compound and the other with plaster. After removing impression compound, build up tooth containing band with paraffin and wax until there is an excess, then close articulator

while wax is yet warm, which will give an impression of the opposing tooth or teeth.

Proceed to carve away all excess of wax so as to produce the shape of the desired cap you wish to re-produce in metal; this is easily and quickly done, and a little experience will make perfect. Take an impression of this wax cap (first oiling it to facilitate removal of impression) by heaping upon it some rather thinly mixed Teague's Compound, which, when set thoroughly, remove, trim and invest in a small shallow metal ring with some more Teague's Compound. Obtain a die from this with Mellotte's metal in the following manner: Place a rubber ring around the metal, one containing impression; melt metal in ladle over a spirit lamp, and pour as cold as possible.

The counter is obtained from the die by encircling it with the rubber ring, and pouring more of the metal at the lowest possible temperature, and cooling immediately. The die should be coated with glycerine before pouring, to prevent cohesion. With a very little practice a smooth die and counter can be made in this way. With this die swage a cap out of No. 34 gauge, 24 K. gold, and filled with 20 K. solder. Remove wax cap from band and adjust the metal cap in proper position. When articulation is perfect mark the relation of band to cap, remove band from articulator, adjust cap by marks to band, and solder with 20 K. solder. If care has been used in every step the result is a crown that will articulate perfectly, and will be exactly the right length.

For bridge work the process is practically the same. The abutment crowns must first be made complete, and the impression and bite taken in plaster, as modelling compound is liable to spring out of shape in removing it.

After attaching to articulator, and removing the impression material, build up the space to be bridged with paraffin and wax, and get impression of opposite teeth as before. In carving up these caps use the porcelain facing selected, as guides as to width of each cap. Get impression of these caps with Teague's Compound, construct die and counter, and swage up in one piece of No. 34 gauge, 24 K. gold, then fill with 20 K. solder. The facings are ground to fit, then backed with platinum and adjusted in the usual manner with Parr's hard wax flux, the whole soldered together with 18 K. solder.

TO MAKE PERFECT FIT OF CROWN TO ROOT.

DR. J. D. PATTERSON.

Western Dental Journal, February.

After reducing the root to the desired shape, take No. 30 gauge pure gold and burnish to the stump; punch a hole in the plate and drive the post (which has already been closely adjusted as to size) to its proper place; remove pin and plate and tack with a small piece of solder, then trim gold to nearly correspond to periphery of root, put in place, and with burnisher and wooden dowel you can mallet and burnish the gold to a water-tight joint between plate and root. Then trim plate to conform exactly to the periphery of root; fit and back up the tooth preferably by the Hollingsworth method and solder in the usual way to the post and cap. When polished you have a crown which fits most perfectly over the entire end of the root. In cementing to place, a thin film of cement will be caught between root and cap, but not enough to injure the strength of the whole.

PLACING LOGAN CROWNS ON BADLY DECAYED ROOTS.

DR. G. W. DENNIS.

Dental Review, December.

When a root decays, it does so from within outward, the cementum being a good protection. If the outer third of the root is carefully cleansed down to the sound substance, or, if a sound root, if it be reamed out, and if, in either case it is then beveled off to the cementum, and a lining of strong amalgam is inserted, you will get both strength for the root, and protection from caries. A band within the root, strengthens as much as a band without.

The alloy must be quick setting, if the operation is to be finished at one sitting, and the opening for the admission of the post should be but little larger than the post itself, in fact an opening can be left through the amalgam and the post gradually forced up to form the channel, then after it is withdrawn and barbed it will fit so closely that but little cement can be used, and another advan-

tage is, that the crown being forced up while the amalgam is soft, the amalgam will conform to the shape of the cervical portion of the crown, thus making a very close joint, which will not allow of the disintegration of cement, at any very rapid rate.

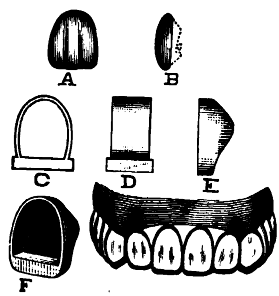
HACKER BRIDGE.

DR. GRANT MITCHELL.

Dental Register, September.

The construction of this kind of a bridge is, briefly, as follows: The roots and crowns to be used as anchorages are prepared in the usual manner. Ordinary plain teeth of suitable sizes may be selected. The pins ground off as shown in the illustration (A. B. Fig. 1.) Stirrups of gold are then shaped around them; using about No. 14 or 16 gauges at the cutting or grinding edges

Fig. 1.

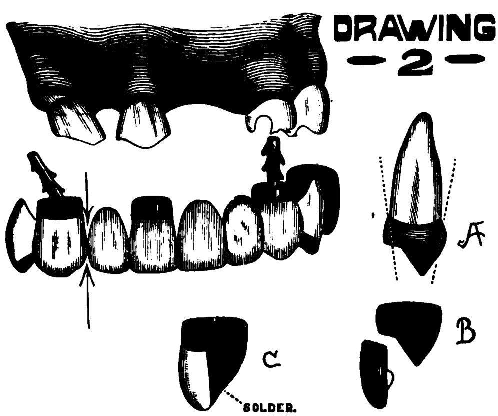


(C. Fig. 1), and No. 24 for hoops. Trim to contour, and solder to back of plates; making shells very heavy and thick enough to do all necessary contouring. Mount on the model and solder. Fill the shells with cement, fit in the fronts and round off the edges. We thus have a strong bridge, on which none of the porcelains have been split or checked in soldering.

As I made a piece, recently, that called into practice nearly all of the principles connected with this style of denture, I will describe it. The right superior first bicuspid, right superior lateral, left superior central and lateral and left superior first bicuspid missing. The right superior cuspid through a peculiarity of the occlusion

had been tilted forward in its socket, almost closing the space occasioned by the loss of the lateral incisor. The central was abraded to more than half its length, and the left superior cuspid was decayed, and broken off near the gum. The other teeth, the first molar on the left, and second bicuspid, and first molar on the right were in fair condition.

The first step was to tap the right superior cuspid and make an application to devitalize the pulp. At the same sitting the other abutments for the bridge were prepared by grinding square the abraded edges and truing the sides of the central with corundum wheels and disks. Next beveled the labial side leaving a slight shoulder near the gum, as shown in drawing 2, Fig. A.



A strip of block-tin, No. 30 gauge, and a quarter to five-sixteenths of an inch in width, by one and a half inches in length, trimmed to approximate the festoon of the gum, was placed around the tooth as prepared, drawn close and held in position by the fingers of the left hand. With a pair of flat-nosed pliers the ends of the tin band were grasped in such a manner as to draw it to an accurate fit. The band was then withdrawn, carefully straightened, and the ends cut just outside the marks left by the nose of the pliers. Then cut a strip of gold from the pattern thus made, beveled the ends on opposite sides with a hammer and anvil, bent into the form of a hoop, till the ends overlapped, and soldered with 20 K. gold.

Thus a band was made that fitted the tooth at the neck—the place where the band ought to fit. The band was then beveled at

the cervical edge and driven on—this, sometimes, requires no little force. Next burnished a plate of pure gold over the end and beveled surface of the tooth, inside the band, secured it with wax, removed, invested, soldered and returned to position. The labial side of the band was then trimmed, leaving a cap, such as is shown at Fig. B. A porcelain facing was ground to fit, backed with thin platinum—the backing being held in place by bending the pins over it, waxed in position, and carefully removed for investment and soldering. While waiting for the first investment of the central cap to harden, I prepared the left superior cuspid root by grinding off the frail edges near the gum, and with excavators suitably tempered, the enamel was quickly and easily scaled off. A cap made just as described, except the cap was perforated and a pure platinum pin, No. 17, inserted, extending into the root, making the ordinary Richmond crown. The left superior second bicuspid was next in order, and with disks, flexo-files and corundum wheels of various sizes, this was soon reduced to the proper shape for cap-crowning. In all cases using the block-tin patterns.

The patient was then dismissed to await the action of the arsenical application—returning next day with the nerve slightly sensitive, yet sufficiently dulled to admit of its extirpation.

Excised the crown, made a Richmond crown as described, with a pin standing off at a decided angle, as shown in the illustration.

The caps and crowns were all placed in position and a plaster impression taken, from which a plaster-and-marble-dust model was made. Dummys, backed in the usual manner, by burnishing thin platinum over the lingual side, investing, and melting coin scraps over the platinum surfaces, were mounted on the model; the whole invested as one piece and the parts united with solder (using care, however, not to unite the right superior cuspid with the lateral incisor adjoining—making two separate pieces of it—the right lateral incisor swinging from the central abutment and the right first bicuspid swinging from the cuspid.)

TO PLACE LOGAN CROWN ON BADLY DECAYED ROOTS.

DR. G. A. YANT.

Western Dental Journal, September.

The author gives the following method of using the Logan Crown when roots are badly cupped out by decay and not to be banded. When foramen has been closed, canal cut to proper depth and a trifle larger than post to be used, root is trimmed as desired and canal roughened to hold amalgam. Take the crown—which should be near the length it will be when finished, post not quite reaching bottom of canal and fitting loosely—wrap around post entire length a very thin piece of rolled gold or platinum, put enough cement in upper end of canal to hold covering of post and press crown to place as nearly in exact position desired as possible; when cement has hardened remove crown and fill around tube with amalgam to fullness required, set crown with cement only enough to fill nicely around post, letting crown rest solidly upon the amalgam and trim, or after amalgam has hardened grind and trim to shape, fit and set crown.

LOGAN CROWN WITH COLLAR.

DR. G. W. DENNIS.

Dental Review, December.

A convenient method of adjusting this work is as follows: Cut the root off squarely, a short distance (perhaps 1-32 of an inch) below the gum line and enlarge the canal to just receive the post, then grind the cervical end of the crown to fit the root, and secure alignment.

The crown should be larger at the neck than the end of the root. After grinding properly into place, proceed to level or smooth the sides of the root, and make a close fitting band, adjust the band and slightly oil it, mix oxyphosphate quite thick and place over the cervical end of the crown, and, entering the post into the root canal, push the crown up against the band and withdraw carefully. You will now have an impress of the band in the oxyphosphate, and after the cement hardens, proceed to grind the crown smoothly down

and slightly beveling all around to the mark in the cement; then try it and if it needs more grinding it can be done, but it should go to place on first trial, usually, and make a very close fit, as the gold collar will stretch slightly. Then set with the cement, as it could not escape if mixed thick, and you will have a joint nearly or quite impervious to moisture and a fine support for both crown and root, practically one piece. A very important matter in porcelain crown setting is to have the channel for the post small enough so that, after barbing the post, it will be difficult to remove it without the presence of cement.

COPPER LINED BANDS FOR ROOTS.

DR. A. V. ELLIOTT

Highly recommends copper lined bands for roots in crowning and for clasps on account of the germicidal qualities of the copper.

CROWNING ROOTS.

DR. W. MITCHELL.

Dental Review, November.

In most cases where a porcelain crown is desirable, a very careful preparation of the root is imperative. This can easily be accomplished by most of the various means at our disposal. Make the end of the root to which the crown is to be fitted quite concave, then, whether it is an all porcelain crown or one with metal attachment, it leaves the minimum amount of fitting to do, viz: at the circumference of the root. This method of shaping the root is also an advantage in the final stage, permitting as it does the minimum amount of setting material when the greatest perfection of contact with the root is required.

I much prefer the Bonwill, permitting as it does the greatest possible range for restoration of lost tissue, anatomical adaptability, and greatest resistance for masticating purposes. I would strongly impress the necessity of a thorough preparation of the pulp canal, and the discarding of a too prevalent custom of using a stereo-

typed form of pin or screw. It is well to have a varied assortment of anchorage pins, screws of different sizes, roughened pins, round, oval and flattened, all of which are to be well adapted to the requirements of the root. The majority of pins as prepared and sold, are too small, and are usually made of material that does not bear well the exactions imposed upon them.

German silver is the best material of which to make pins or screws for this class of work. The wire may be drawn down to the required sizes, and cut to different threads, not too fine, and somewhat sharp. Two of these pins may frequently be used in the case of bicuspids, being soldered together where the crown is to cover them, making the part in the root to approximate the shape of the tines of a tuning fork; this prevents any possibility of rotation, and almost entirely prevents fracture of the pin where the strain is the greatest.

After the pin has been set, and the crown adapted, an expeditious way of setting it is by the use of a combination of quick-setting cement and amalgam, as follows: Having first filled the countersink with amalgam, fill the under side with cement, and press crown firmly to place. This presses out all surplus cement from beneath the crown, thereby securing a perfect joint at the cervix, besides saving the time required for cutting out the cement, and refilling with amalgam, which would be necessary were not the amalgam used in conjunction with the cement. The operation is also rendered more cleanly than where the cement is allowed to exude through the crown.

Where a tooth is to be backed and soldered to a pin, after fitting the pin and adapting a platinum or fine gold plate to the face of the root, these are to be soldered together in the required position, after which, any final adjustment of the plate to the root may be made.

After the pin and plate are in the correct position the tooth can be fitted, backed, waxed, invested, soldered and finished. This method answers all requirements where single teeth are mounted, affording at once an immunity from pain for the patient, better adaptability of the crown to the root and gum, to say nothing of bleeding, which is almost inseparable from this class of operations, when deep bands are used.

In cases where decay has progressed through the bifurcations

of molar teeth, we sometimes see this ignored, and crowns made to fit over the entire roots, as though no separation had taken place. This leaves the tooth in a very unsanitary condition, and which may eventuate in much trouble, and the collapse of the operation. My course of procedure in such cases is, where the separation of the roots is not quite complete, to separate with a fine fissure bur, and crown as individual roots. In the case of lower molars where the roots are perfectly solid, make what is practically bicuspid crowns, should one root be somewhat loose, but otherwise in a reasonably good condition, solder both crowns together at the grinding surface; this promotes a steadiness which in most cases is all the shaky root requires to restore it to a state of comfort and usefulness. In the case of upper molars: after fitting the bands to the roots, remove in any suitable impression material, pour in sand and plaster, then solder them along their entire length, except where they are to pass beneath the gum, also solder together at the grinding surface; a very strong, cleanly operation is the result. In no case is it good practice where the roots are separated to make one band encompass the detached roots, as it is impossible to secure the requisite amount of steadiness necessary to a successful operation. This, with the natural mobility of the roots, will eventuate in their loss, their destruction being accelerated by the unavoidable accumulation of oral secretions, that are inseparable from this class of operations.

BRIDGE FROM SECOND BICUSPID TO THIRD MOLAR.

DR. J. S. THOMPSON.

Southern Dental Journal, July.

The writer says to construct such a bridge, prepare the two abutments and make for each a gold crown. Stamp up seamless gold crowns for the missing teeth, trim them so they will not touch the gum on the outside, sloping to the masticating surface on the inside. Place the crowns on the molar and bicuspid, and place in position the bridge crowns, using a little wax between them and the gum to hold them in position; let the patient close the jaws,

thereby making the articulation. Mark on the bicuspid and first molar their respective positions, remove the two, and by holding with pliers tack together with a small piece of solder, replace them in the mouth and mark on the first and second molars their respective positions, remove them and tack together with solder. Each bridge crown is thus attached to its respective abutment. Place the skeleton back in the mouth and perfect the articulation, remove carefully, invest and solder. Fill the hollow bridge crowns with scrap gold and flow solder over them. This work the author states is all done while the patient is in the chair, and only pure gold is used.

A SAFETY-PIN FOR ARTIFICIAL TOOTH-CROWNS.

DR. M. RYNEAR.

Dental Cosmos, January.

In attaching porcelain crowns to the roots of teeth, it has been the custom to enlarge the pulp-canal so that the cavity thus formed is perceptibly larger than the pin employed, which pin is usually constructed from a solid piece of metal, either round, square, tubular, or tapered.

The evident inability under such conditions to obtain a firm bearing for the pin during the time necessary for the cement to harden has, no doubt, been the immediate cause of many failures, for the reason that the slightest movement at this time tends to destroy the adhesion of the cement and to affect the expression of the crown by altering the angle of hold.

The safety-pin seeks to remedy these and other defects. Fig. 1 shows the safety-pin, which consists of a flattened piece of metal with a longitudinal slot in the upper portion and a smaller circular hole or slot near the base.

Figure 2 is a staple or saddle, also made of metal, which can be used to strengthen the pin at its neck by being placed through the longitudinal hole in the pin, as shown in Fig. 3.

Figure 4 is a platinum tube which can be passed through the hole in the base of the pin, and in combination with the saddle, Fig. 5, can be baked into the body of the tooth, Fig. 6.

Figure 7 is a new porcelain tooth, which is a combination of the pivot tooth and the Genese crown, being made after the pattern of the pivot tooth, with a piece of platinum baked into it at its base.

Figure 8 is a twist-drill of definite size, the diameter of which corresponds exactly with that of the safety-pin.

Figure 9 is a file with definite curve, which corresponds exactly with the curve at the base of the porcelain tooth.

Figure 10 is a tool by means of which the pin can be shaped as it is in Fig. 11.

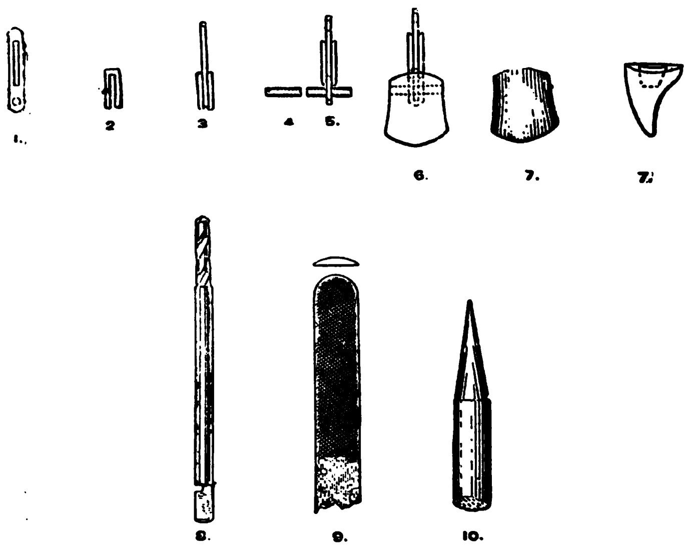


Figure 12 shows root of a tooth which has been concaved at its neck by means of the file, Fig. 9, to correspond exactly with the convex root border of the tooth-crown, Fig. 7.

Figure 13 is a sectional view of the same root, with a hole made by the twist-drill, Fig. 8, which hole corresponds in diameter with that of the safety-pin.

Figure 14 shows side view of a porcelain tooth with pin attached and applied to the root.

Figure 15 shows a front view of the same tooth.

Figure 16 shows a front sectional view of a root with crown attached, having platinum pin, saddle and tube baked into the porcelain, as shown in Fig. 6.

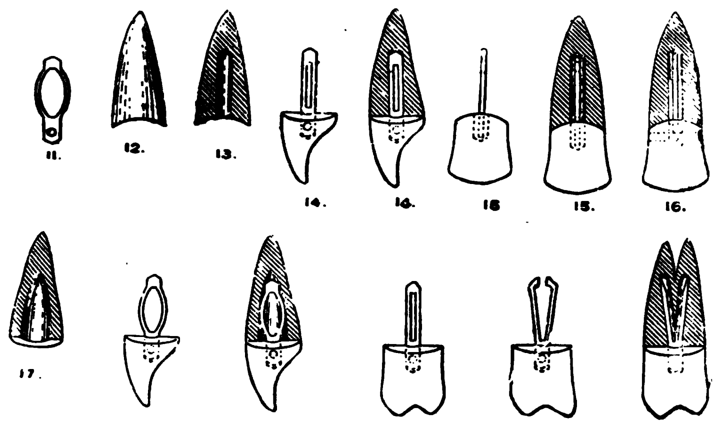
Figure 17 shows a sectional view of a root with the pulp-canal enlarged.

Figure 18 is a sectional view of the same root with porcelain tooth attached, having the safety-pin spread, as shown in Fig. 11.

Figure 19 is a porcelain tooth with safety-pin attached, the pin being divided at its upper end, thus forming two pins, each having a pronged point, the pins bifurcating from a common base.

Figure 20 is a sectional view of a bicuspid root with porcelain tooth attached, having divided pin as shown in Fig. 19.

The advantages claimed for the safety-pin are: It is capable of being perfectly adapted to any of the front teeth. It affords



11. 12. 13. 14. 14. 15 15. 16.

17. 18. 18. 19 19. 20.

bearings within the root by means of which the crown is retained in its proper position during the time the cement is hardening.

It can be firmly attached to the root by means of the solid hold afforded by the cement passing through the longitudinal slot, or when the upper end of the pin is divided by means of the prongs at the ends of the two pins thus formed.

The hole in the base of the pin allows of a platinum tube or pin being passed through the same, as before explained, Fig. 5, to which the teeth can be attached to the approximal surfaces of the crown.

The longitudinal slot in the upper portion of the pin permits of the saddle being passed through it (also explained in Fig. 5), thereby greatly strengthening the pin at its neck and preventing it being bent at this point after it has been cemented to the root.

In combination with the porcelain crown (Fig. 7), the pin and the crown can be fitted separately to the root, thus securing a perfect adaptation of all the parts.

In applying a crown according to the method here suggested, it will be found that it can be done without pain to the patient, and that it requires but a little time and trouble on the part of the operator to accomplish an effective and durable piece of work.

TO RESET A BROKEN PIVOT TOOTH.

DR. EMIL AMEND.

Dental Cosmos, January.

It sometimes happens that an artificial tooth-crown mounted on a pivot breaks off, leaving the pivot firmly fixed in the root, from which it may be for several reasons impracticable to remove it. In such a case use an engine trephine (Fig. 1) to bore a groove, C, in the root end A, Fig. 2, around the pivot, B, to a depth consistent with the strength of both the pivot and the root. A hole, D, is then drilled in the palatal part of the root end to the same

FIG. 1.

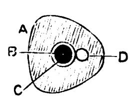


FIG. 2.

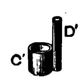


FIG. 3.

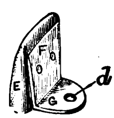


FIG. 4.

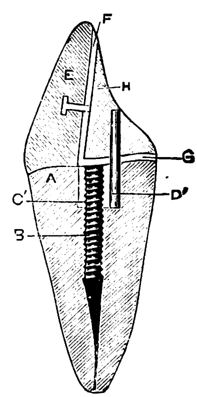


FIG. 5.

depth as the groove around the pivot. From a gold or platinum tube of the size of the trephine a section C′, Fig. 3, is cut and soldered to a piece of platinum wire, D′, which just fits the hole D in the root A, Fig. 2. The tube and wire are then put in place, and the tube made flush with the pivot and root end. A plain tooth,

E, Fig. 4, is selected, ground and backed with platinum, F, so that a part of the backing may be bent and cut as shown at G to the shape of the root end, and drilled at d to fit over the wire D′, Fig. 3. Hard wax is then melted to unite the backing to the wire, so that all may be withdrawn from the root, invested and soldered to form a contour, which, when subsequently finished, will make a strong, smooth crown-back, H, Fig. 5, which shows in section the several parts of the crown as reset with suitable thin cement on the pivot and root before described.

TO MAKE PIN FOR CROWNS.

DR. F. T. VAN WOERT.

Dental Cosmos, January.

Whittle a piece of soft pine wood to fit the hole in the root, with a mallet gently drive it in, remove and wrap around it platinum foil, replace it in the root, and drive it lightly to place with an ordinary gold plugging mallet. Remove it, and slide the platinum from the stick; place it on soldering block, and fill it in with some good rigid metal, such as clasp metal, or 18-carat gold, taking the precaution to coat the outer surface with whiting to prevent the metal from flowing over it. This gives a pin that fits the cavity as nearly as it is possible to make one. It requires very little cement in the setting, and makes a very rigid and serviceable crown anchorage; with the root prepared convex you will find it almost an utter impossibility to fracture the same.

ORTHODONTIA.

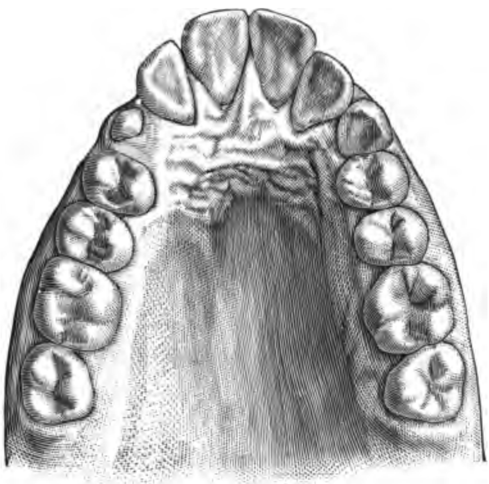
PROTRUDING UPPER AND INTRUDING LOWER INCISORS.

DR. NORMAN W. KINGSLEY.

Dental Cosmos, February.

The following described case is that of a boy between thirteen and fourteen years of age. The arrangement of the teeth in the upper jaw is shown in Fig. 1, that of the lower jaw in Fig. 2, and the articulation of both in Fig. 3.

FIG. 1.



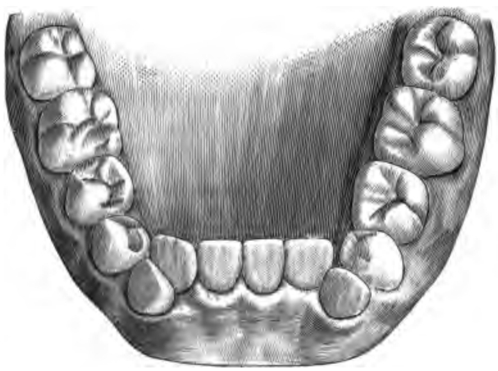
In the upper jaw one of the cuspids is fully developed, while the other is just emerging from the gum.

The alveolar arch, as related to the size of the teeth, is narrow; not narrow positively, because in a smaller face and with smaller teeth the width of this one would not be abnormal. The width of the lower jaw corresponds with the upper one, and for masticating purposes the articulation is good and sufficient, but the four

lower incisors have grown upward until they are half the length of their crowns above the adjoining teeth, as well as that much above the line of a regular arch.

The plan which I formed to correct this deformity was the

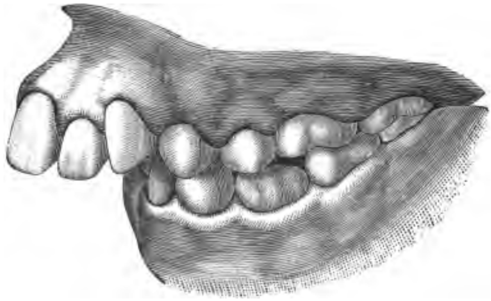
FIG. 2.



result partly of my own judgment, and partly to humor the strong desire of the mother that it should be done, if possible, without extracting any teeth. With that view I decided to attempt to accomplish it by widening the jaw, retreating somewhat the upper incisors, and complete it by "jumping the bite."

The apparatus for that purpose is shown in Fig. 4, and consists of a vulcanite plate and jack screw for widening the arch, and,

FIG. 3.



acting simultaneously with it, a T bearing on the face of the central incisors and connected by a rubber strap to a hook in the central part of the plate, as seen in Fig. 4.

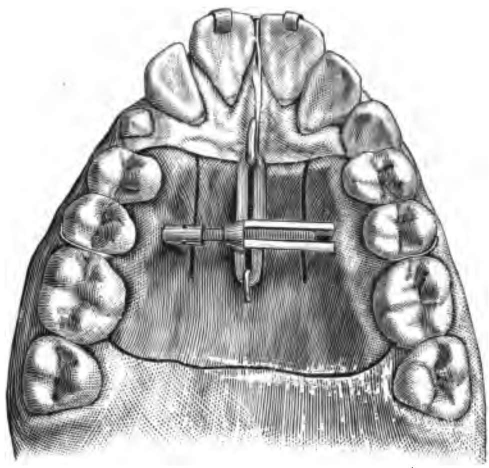
The jack screw was tightened daily for a couple of weeks, and

the jaw widened about half the diameter of a bicuspid, but the incisors had not moved perceptibly, nor had the widening made an enlargement of the circle sufficient to permit the incisors to be carried back.

I then realized more fully than I had before, first, the necessity for the removal of one tooth upon each side of the upper jaw; second, the exceedingly short upper lip; and third, that if the incisors were moved back in the usual way they would become elongated.

An experiment was made with a plaster model of the jaw, to determine approximately what that elongation would probably be.

FIG. 4.



The incisors were cut out of the model with roots, and reset on the model, keeping the extreme ends of the roots to their original position and moving the crowns to the place desired.

This experiment showed that in dropping the teeth from the angle occupied in the jaw to a perpendicular position, they would appear to be nearly half the length of their crowns longer than before. Taking the boy's short upper lip into consideration, such an elongation would have created a deformity worse than the first.

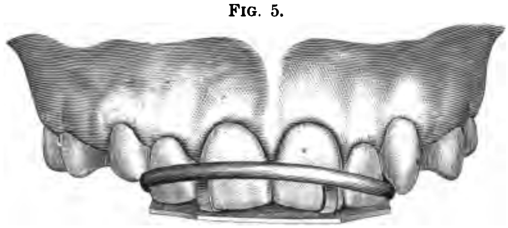
The first step in the second stage of treatment was the removal of the first bicuspid upon each side, and a plate was made of silver covering the roof of the mouth and the teeth. This was made of

silver in preference to vulcanite, because as little thickness as possible was wanted over the molars and bicuspids, and that thickness to be uniform, so that the interference with the lower teeth in mastication caused by widening the upper jaw might have a tendency to widen the lower one to the same extent. This plate was retained in position by narrow clasps around the molars, and, when fitted, a bite was taken upon it in wax to show the position of the lower incisors.

The plate was then extended horizontally like a flange or apron in front of the lower incisors, on a level with and resting upon the cutting-edges of the upper incisors. This apron did not interfere with the lower incisors in masticating, as they closed behind it.

A stout band of gold was made to fit the face of the upper

FIG. 5.



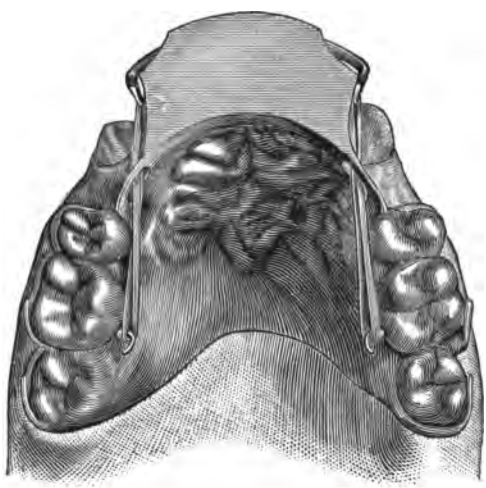
incisors, with a hook at each end, and hooks over the cutting-edges to keep it in position. The strain upon the teeth was made with rubber elastics, reaching from the extremities of the bar backward, and caught on hooks near the posterior border of the silver plate. This apparatus is shown in Figs. 5 and 6. It needs no argument or description to show that while in use the incisors must be moved backward by the strain of the elastics, and that it was impossible for them to become elongated so long as the plate was kept in close contact with the molars and bicuspids, and this contact was secured by the clasps and by mastication upon it. This is exactly what it did accomplish. It was worn uninterruptedly except for cleansing, and was readily removable (almost too readily) by the patient. The only attention required at the office was to cut off the horizontal flange from time to time as the incisors were retreated.

There was no guessing at the movement of the incisors; cutting the flange even with their faces, the projection at the next visit would show the gain.

The plate represented in the drawing is the identical one which did the work, only that as the flange was cut off by piecemeal during its use, a new one has taken its place for the purpose of this illustration.

The time required for the incisors to be moved backward into a perpendicular position was about two months, and, according to the experiment before described, they must have been driven up in their sockets nearly or quite half the length of their exposed crowns; nevertheless, the crown-exposure below the gums did not appear to be lessened. In this description and in the illustration, it will be seen that this apparatus bore only on the incisors.

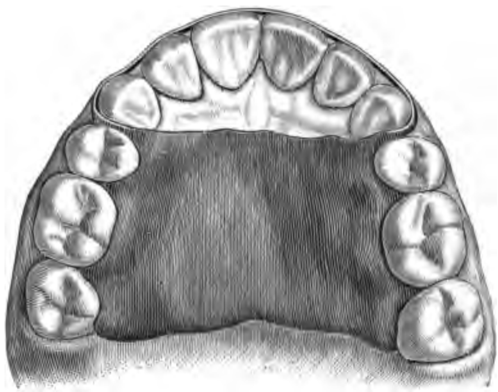
FIG. 6



The undeveloped cuspid upon the right side of the mouth was left to the forces of eruption to bring it into the place of the extracted bicuspid, and it was calculated that the secondary pressure upon the left cuspid would drive that also, but it did not, and it was soon observed that the incisors were falling in behind it, giving it the appearance of being forced outward instead of backward. As soon as this was discovered, a band, with a hook upon it, was cemented to the cuspid, and an elastic strapped to a hook at the end of one of the clasps on the face of a molar, as seen in the illustration. This served to reduce it to the desired position as soon as the incisors had reached theirs. To retain these teeth in place, a vulcanite plate was made with a band of half-round gold wire in front

of the incisors, as shown in Fig. 7, which also shows the circular form which the arch has assumed. The shortening of the arch from the center in front to the posterior border of the molars, measured as described before, is eighteen per cent. It is not likely that all this shortening of that line is due to the retreating of the incisors; it is probable that the molars and bicuspids yielded somewhat to the strain, and moved toward the front; nevertheless, a comparison of the articulated models before and after fails to detect it, but this can be accounted for by the supposition that the lower jaw moved forward and accommodated itself to the upper one.

Fig. 7.



It was not until the regulation of the upper jaw was completed that any attention was given to the lower one. While in many cases regulation of upper and lower teeth can be carried on simultaneously, in this case nothing could be done with the lower jaw without interfering with the apparatus on the upper one.

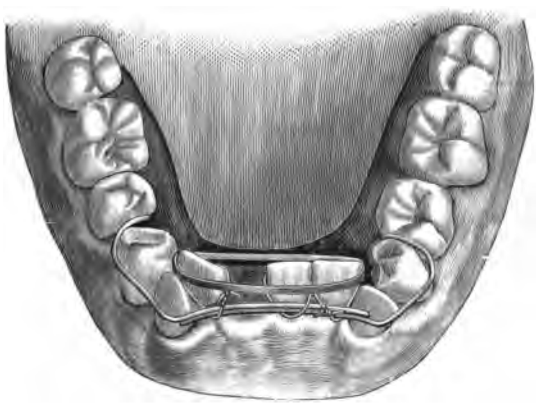
The lower incisors, as will be seen by reference to Fig. 2, are elongated and crowded between the cuspids, or, as some might say, the cuspids were crowded out of place; and, in fact, in some other cases exactly like it, without considering the relation to the upper jaw, I should have so decided, and would have expanded the arch so as to have brought them all into line; but the upper arch had now been reduced so much in size by the extraction of the bicuspids and the retreated incisors. that some tooth in the lower jaw must be sacrificed.

The simplest and best way which I have advocated for many

years in similar cases is the removal of one of the incisors, particularly when the occlusion of the teeth behind the cuspids is fairly good.

In this case, as in most others, where one is to be extracted, I have chosen a central, the reason being that the inclination of the remaining teeth will appear better than when one of the laterals is extracted, and the three teeth remaining all lean that way in closing up the gap. One of these centrals was removed, and an appliance, as shown in Fig. 8, was adjusted. It was a vulcanite plate with piano wires, one from each side, meeting and lapping in front,

FIG. 8.



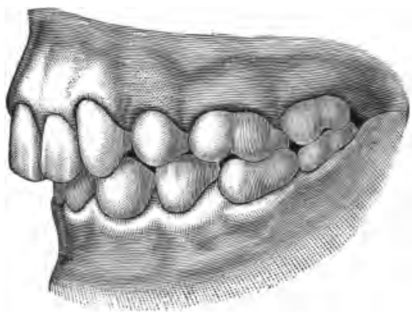
and in their relaxed position standing off for an eighth of an inch from the face of the teeth, but were sprung in and tied to the incisors with waxed ligatures. This vulcanite plate was made pretty stout, comparatively non-elastic, and impinged upon the lingual walls of the bicuspids and molars, for the purpose of assisting nature, which was widening the arch by occlusion with the upper one, and, as from time to time it loosened by those teeth yielding, the plate was warmed and readjusted. A small ring from rubber tubing was also stretched over the three teeth, to assist in closing the gap.

In four weeks the space was closed, and an expert could not, with certainty, tell which tooth had been removed. The retaining fixture was exactly like the regulating plate without the piano-wire attachments. The final condition is shown in Fig. 9. The most singular result of the rearrangement of the lower incisors, and one

for which at present I do not attempt to account, is that these teeth have gone down into their sockets not less than a quarter the length of their crowns; they are no longer higher than the natural plane of the lower arch.

I say that these teeth appear to have been driven into their sockets, but no apparatus worn on either the upper or lower jaw could have had such a tendency; on the contrary, the strain upon

FIG. 9.



them in moving forward would have been more likely to have elongated them than to have shortened them. If we cannot accept the idea that they sunk in their sockets, we are forced to the only other alternative, that all the other teeth, cuspids, bicuspids, and molars, simultaneously and uniformly rose from their sockets, for certainly now the plane is not abnormal.

SURGICAL TREATMENT OF IRREGULARITIES.

DR. L. C. BRYAN.

Dental Review, November.

There is one class of irregularities which is exceedingly annoying; and after a considerable waste of energy on my part, and a trial of endurance on the part of the patient, I have for four years tried surgical treatment on them of what might be called a heroic nature. Irregularly erupted incisors and cuspids erupting palatally —inside the arch—are the special class to which I refer; but the treatment described for them will apply in modifications to a variety of irregularities.

The notorious resistance of the long rooted, partially erupted,

cuspids to almost all of the usual appliances for their regulation, and the persistent effort necessary to move them, with not infrequent cases in which this resistance requires a force which not only puts serious strain on other teeth used as fulcrums or abutments, but produces displacement of them of a serious and annoying nature, are my excuse for presenting the following treatment given a cuspid which has erupted irregularly inside the arch, say for a young lady of twenty.

The temporary cuspid has, perhaps, remained firmly in place and the young lady has never consented to its removal. The den-

tist not being assured that a successor will immediately present itself to fill the void, which would be a decided disfigurement if the eruption of the permanent cuspid were long delayed, the operation is deferred and in time the point of the permanent cuspid appears inside the arch. These cases usually develop very slowly. The partially erupted point is the most trying subject to grapple with, and the most difficult to deal with, when secured, of any dental member.

The treatment which I have finally adopted is to inject cocaine and either partially cut away the thick intervening alveolus with drills and long fissure burs, or, when the alveolus is thin, bodily wedge the outer alveolar wall away with a half round, wedge-shaped chisel, by inserting the point of the instrument between the tooth crown and the bone, and forcing it up along the root until

enough space is secured for the tooth to be brought out into place outside the lower tooth.

The forceps are applied as shown in the cut.

The curved, long, round serrated jaw rests on a fulcrum fitted to the arch of the maxillary to be operated on, and the short beak pushes against the palatal aspect of the tooth to be brought out into line. It is absolutely necessary to lift the outer alveolar plate before attempting regulation, on account of the great danger of accident to the pulp if the alveolar margin, including the solid septa between the teeth, are not broken up. The outer alveolar plate must be so broken up nearly as far as the apex, that the apex will not move in its position, otherwise the nerve will be cut off by any considerable lateral movement of the point of the root.

In bringing teeth into the arch by any system of regulating, or in moving them in any direction, in which heavy alveolus is to be encountered, great assistance is afforded to nature in her efforts to absorb the alveolar bone through which the root must pass, if a part of the bone is drilled away, and the inflammation which accompanies absorption, by almost all the usual methods of moving teeth, is greatly lessened.

The greatest point of resistance in the alveolar wall is the heavy margin, or ridge, and the septum which clasps the neck of the tooth; and if this is broken up, either by wedging outward, or drilling it away, the deeper bone, which is very cellular and soft, offers little resistance to the tooth root being moved. The strength of this alveolar ridge of bone is so much greater than that of the internal body of the bone that when teeth are pushed with great force, applied against the point, this ridge acts as an unyielding fulcrum, while the point of the root moves an equal distance in an opposite direction to the point, generally cutting the pulp connections off on the bone through which it is moved. Shocks, such as blows on the incisors, often cut off the nerve and pulp connections in this way, while the heavy marginal ridge keeps the center, or neck, of the tooth apparently in its normal condition, the point having moved suddenly through the soft cellular bone, and destroyed the connection of the pulp at the apical foramen.

In moving teeth, by traction with ordinary forceps, great care must be exercised, and the forceps beaks must be lined with sheet lead, that the enamel be not injured, or the tooth slip. A strip of

sheet lead the breadth of the tooth is bent over the crown from one side to the other, and burnished down approximately to the surface. When a tooth crown is sufficiently prominent to take an impression, a model of it can be placed in the beaks of a suitable forceps, leaving space around it, and inverting the points of the forceps, melted lead can be poured around the model of the tooth so as to fill out the jaws of the forceps. The resulting lead capsule, slipped over the tooth in the mouth, can be grasped with perfect security by the forceps, and they cannot slip or injure the tooth, although the tooth crown may be decayed and frail. The strip of sheet lead or tin will generally answer the purpose, and is much simpler. In extracting teeth, which are to be replanted or implanted, the crown should always be protected with sheet lead or sheet tin.

By the injection of cocaine, or the application to the gum of calorific fluid, the pain of drilling, or breaking away the bone, can better be borne by highly sensitive or nervous patients than the continued pain of regulating pressure, and consequent systemic disturbance from inflammation and broken rest. When general anæsthesia can be resorted to, the work can be done more thoroughly and carefully. But a small thin model of the points of the antagonizing teeth should first be made to use as a bite for the articulation when the jaws are in a rigid state under the anæsthetic.

Injections of cocaine must be deep and high up to prevent pain in all cases, it being difficult for the cocaine to affect the nerve tissue in such deep-seated operations, for older patients, though the preparatory operation of opening the gum, and lifting alveolus margin, can be done painlessly with cocaine. Gas may be administered if the case is simple, and the operator cool and familiar with it; otherwise, a more lengthy and profound narcosis should be induced, the patient's head being held firmly by an assistant during the operation.

Calorific fluid applied to the gum locally on a pellet of cotton for two or three minutes has a powerful effect, and can he relied on in minor operations on gum and alveolar tissue.

RAPID REGULATING.

DR. A. E. MATTESON.

Dental Cosmos. March.

A recent case which was presented for the correction of an irregularity was treated in the following manner. The age of the patient was twenty-two, and he was a large, well-developed man:

FIG. 1.

The plaster cast represented in Fig. 1 was made October 11; a hickory wood wedge was inserted between the left lateral and second bicuspid, and the patient instructed to renew it every third day. On October 18 a plaster impression was taken, and a "Melotte metal" cast made. The wedging was continued another week, during which time the accompanying device was made and adapted

FIG. 2.

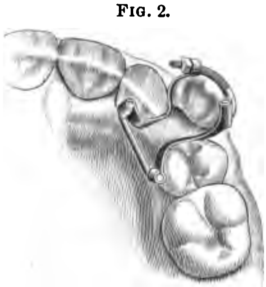
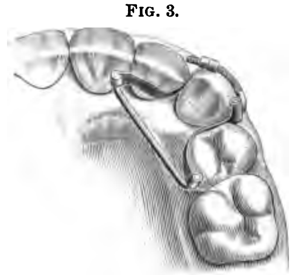


FIG. 3.



to the metal cast, as shown in Fig. 2, and applied October 25. On November 1, the length of the screw having been traversed by the nut, the longer brace shown in Fig. 3 was inserted. On November 8 the screw was again exhausted, and the teeth in position as represented in Fig. 4, which shows the retaining appliance made by banding the cuspid, tubing it transversely on the

lingual surface, and inserting a gold-plated piano wire, No. 15, through the tube resting against the first molar, second bicuspid (first bicuspid missing), lateral and central incisors.

It will be observed that the appliance was worn but two

FIG. 4.

weeks; that the patient was seen but once in the meantime; that the patient had full control of the movement, and had done all the preliminary wedging except in the first instance.

The appliance was made entirely of German silver, and the nut was turned with a patent (split) watch-key, obtainable at any jewelry store.

JACK AND TRACTION SCREW.

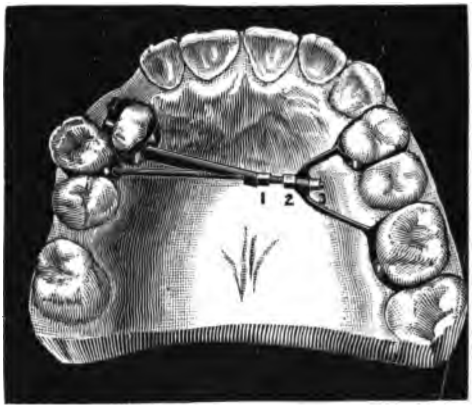
DR. C. S. CASE.

Dental Review, August.

Under this head I wish to mention an implement which I call a "jack and traction screw." It was introduced at the First District Dental Society of New York City, in 1890, and published in the April number of the Cosmos of that year, but I have since made an important addition to it which greatly enlarges its usefulness. See Fig. 1. With this implement the anchorage force used in the movement of one tooth is rendered inert by an equal force expended upon another tooth in an opposite direction. Originally it was intended to move two teeth which were approximal or situated near each other, the one standing within the arch and the other without, both requiring the same magnitude of force to correct

their positions. By means of the improvement if one tooth takes its position before the other, the force can be immediately transferred from it to a static anchorage on the opposite side of the

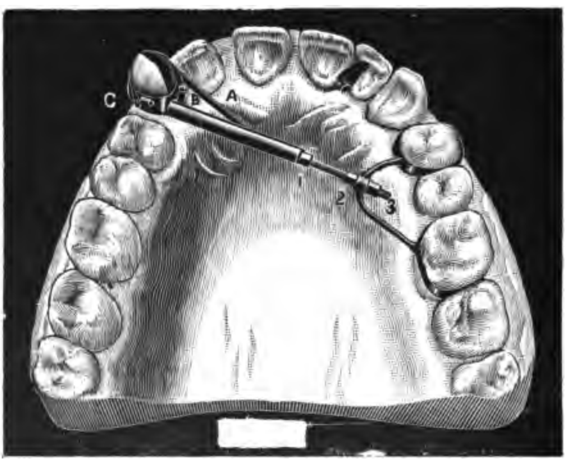
FIG. 1.



jaw, or to some other tooth requiring the same direction of movement, after which the apparatus can be made to continue its work until the other tooth has been forced to the desired place.

The improvement or addition consists in resting the end of the

FIG. 2.



screw bar, loosely, in a short tube soldered to a static anchorage bar, or to a bar or contrivance extending from some tooth which requires to be moved or rotated, and which is brought into the

field of work to utilize the force of inequality, which would otherwise need to be transferred to—and, therefore, lost in—a static anchorage. Then, by adding two extra nuts to the screw bar, the force can be perfectly directed and controlled. For instance, in Fig. 1, if the bicuspid comes to place before the cuspid has been forced out from its inlocked position, the nuts 2 and 3 are tightened on either side of the anchorage bar, fixing it immovably to the anchorage teeth, while by operating nut 1 the cuspid is continued to be forced to place. If on the other hand the cuspid goes to its place first, nut 2 should be loosened and nut 3 made to do the work of pulling in the bicuspid, while nut 1 is kept sufficiently tight to hold the cuspid in place.

Another very important application of the jack and traction screw—where it can be used—is in torsion, and especially when the tooth to be operated needs also to be pushed out or drawn back into the arch.

A thin band soldered to the end of the bar is passed around the tooth and buttoned to the cemented band, while the base of the jack rests against a lug or series of lugs on the opposite side. As the nut is turned, a traction force is extended upon one side of the tooth and an equal jack force upon the other, rotating the tooth upon its long axis, which is the only true way of torsion. Other motion, it required, is produced by operating the nuts at the end of the bar. See Fig. 2.

PROTRUSION OF THE UPPER TEETH AND CLOSE OCCLUSION OF THE JAWS.

DR. C. S. CASE.

Dental Review, July.

The case present is one which will be found of unusual interest, because of the difficulties which seem to be presented in the way of, even a beginning, toward restoration; and on account of the simplicity of the method which was adopted, and its success in correcting a most unhappy deformity.

The case is one of a young lady 13½ years of age when it was commenced, and 16 when finished. The difficulty was not so

much because of the marked protrusion of the upper teeth and jaw, with consequent deformity of the face (see Fig. 1), but mainly on account of the close occlusion of the jaws, which permitted the lower front teeth to strike into the gums in the rear of the upper (see Fig. 4), and so extensively as to keep the mucous membrane inflamed and its surface often abraded, while the alveolar ridge and teeth were being forced further forward, making it impossible to reduce the deformity until the jaws were opened by permanently lengthening the posterior occluding teeth.

Facial deformity in these cases is always more or less marked.

FIG. 1

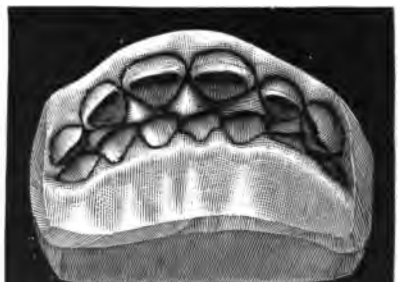


FIG. 4

and its unpleasantness, not more largely due to the exposure of protruding teeth than to an irregular fullness and peculiar hanging, or immobile expression of the upper lip; partly produced by a conscious effort of the muscles to keep the teeth covered.

After trying—without avail—a complicated affair for lengthening the bite, I finally inserted a simple black rubber plate that covered the roof of the mouth and possessed a thickened portion in front to receive the thrust of the six lower anterior teeth. This was worn during the entire operation, with occasional alterations according to the demands of change. The posterior teeth were thus prevented from forcible occlusion until nature had produced in them a sufficient growth and fixed them permanently in their extended positions.

Figure 5 is made from a model of the upper jaw at the begin-

ning of the operation, with the plate in position. Note interproximal spaces.

The only apparatus that was used to overcome the prognathous position of the teeth and jaw was a simple band extending from the

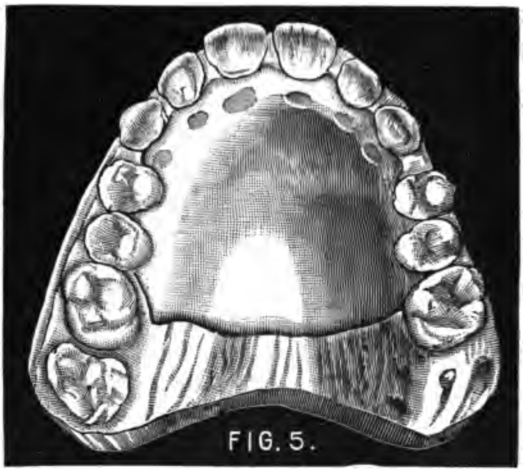


FIG. 5.

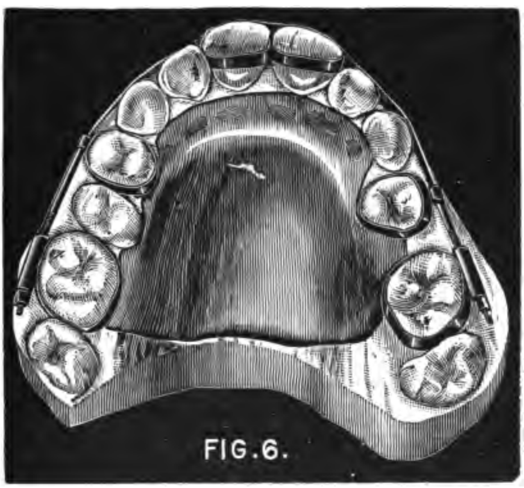


FIG. 6.

molars around the front teeth; the ends of the band were soldered to German silver wire bars (No. 19 E. s. g.), which were threaded and passed through long tubes, or pipes, attached to the buccal surfaces of the banded first molars. The first bicuspids were banded and carried short pipes, in which the bars loosely rested, to aid in

giving greater stability to the anchorage by preventing the molars from tipping forward.

The centrals were also banded and possessed lugs for holding the traction band in position.

Figure 6 represents a model made from an impression taken during an intermediate stage of the operation with the traction apparatus in position. The interproximal spaces are closed, and also the space nearly closed where a bicuspid had been removed. The left second bicuspid was also removed about this time. The plate that was worn is laid upon the model.

The nuts were never turned so as to give a painful tension to the traction band, and the apparatus was worn from the beginning to the end of the operation with comparative comfort and so little mental and physical derangement that school duties were never interrupted on this account.

Dr. E. D. Swain said, in a similar case to this, he capped the molars, which took the pressure off the incisors. In about four months the bicuspids were in antagonism. The caps were removed from the molars and they soon antagonized. An appliance was then made to bring the front teeth in line.

TWO CASES OF IRREGULARITY, TREATMENT, ANGLE SYSTEM.

DR. A. E. MATTESON.

Dental Review, July.

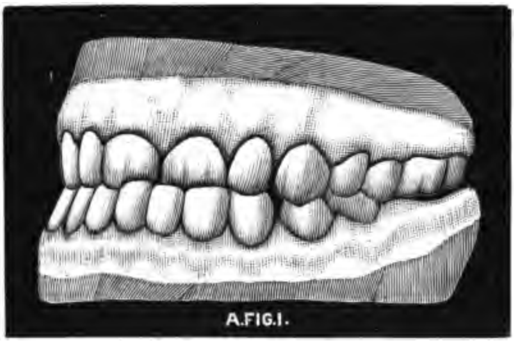
One of them was a young lady, eighteen years of age. The central incisors were occluded just inside of the lower, as represented in A, Figs. 1 and 2. The appliance used is simple, as you will see, and rather after that of Dr. Angle's system. After using and turning the screw, the teeth were brought forward; they had been worn so short it was necessary to elongate them. All that I did was to use the same appliance by bending the wire toward the cutting edge; the spring of it drew the teeth down. A, Fig. 3, shows the case a month after the appliance had been taken off. The appliance was worn six weeks.

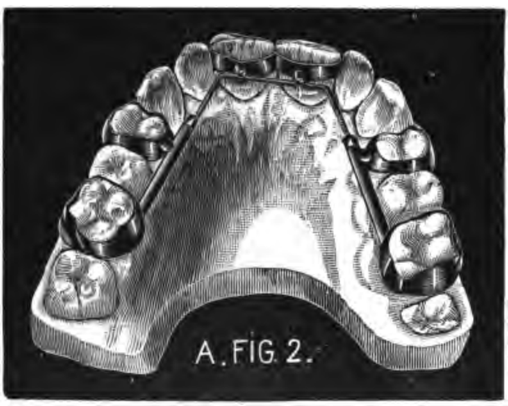
The other case (B, Figs. 1, 2, 3,) was that of a boy, aged thir-

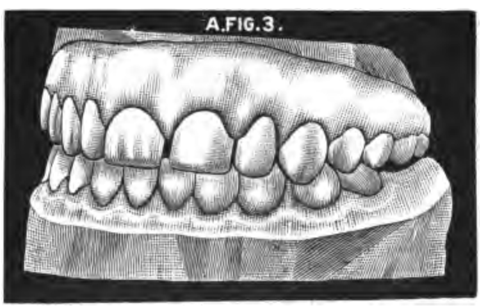
teen years, with the left central and lateral incisors occluding within the lower teeth—the bicuspids standing within the arch—nearly their width—and the left second bicuspids twisted fully 45° and the whole arch contracted.

The management was as follows:

The first right molar and first right bicuspid were banded.


A. FIG. 1.


A. FIG. 2.


A. FIG. 3.

On the lingual side of the bicuspid was soldered a short tube. One end of screw-cut German silver wire (No. 20 gauge) was soldered to the band on the molar—the other end passing through the tube on the bicuspid band. On this wire screw between the bands, was placed first a nut then a T tube, and in front of the T tube and of the band of bicuspid another nut.

The left central was banded with "gold platina" plate with a lug on the lingual surface.

The left second bicuspid was banded and a short tube on the buccal, and a long T tube on the lingual surfaces, was soldered transversely.

Schomacher gold-plated piano wire (No. 16 gauge) was formed, the ends passing into the openings of the T tubes and in contact with the central incisor above the lugs.

This piano wire was supplemented with another (No. 14) and united by winding with fine wire and soft solder. The free end of this wire (No. 14) forced out the lateral.

The second bicuspid was rotated by changing the angle of the piano wire where it entered the tube of the left bicuspid.

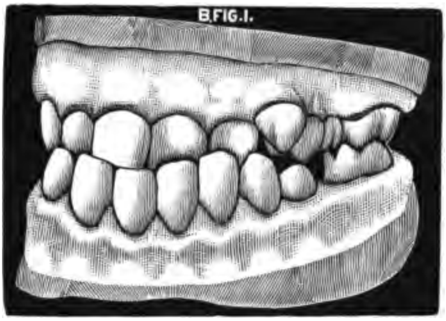
By turning the nut, which is back of the loose T tube, forward, the pressure was brought against the central and lateral. This also permitted the adjustment of the expansion of the arch either in the region of the molar or bicuspid. The nut in front of the screw was used to draw the first bicuspid back.

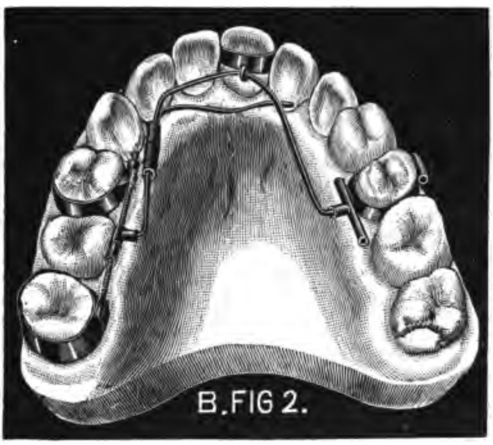
The tube on the buccal surface of the left bicuspid band was to lock, when in position, with a pin.

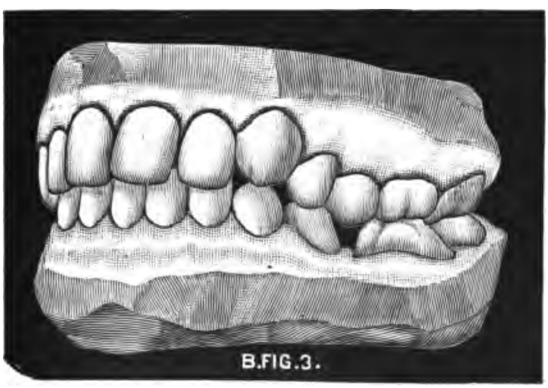
The long tube on the inside of this band was to support it with the contingency of cutting a thread on this end of the piano wire, and with a nut, form a jackscrew to assist in forcing the incisors, although the necessity for this did not arise. This piano wire which I have mentioned is superior to any which I have used. It might be improved by a heavier plating. It can be obtained larger than I have mentioned, but I have found No. 16 sufficient to expand the arch of any case so far since commencing its use.

In regard to making these nuts for irregularity cases, having found that cutting them out of solid nickel and German silver plate, to be drilled, tapped and squared, a very tedious process, I have simplified the method greatly by first drawing tubes of platinized silver (one part platinum and two parts silver), soldering

the joint with 20 k. gold, then drawing through a "square hole" draw plate, inserting piano wire in the tube, thus making a square tube with a round hole, then sawing off enough for a nut.







THROWING THE LOWER JAW FORWARD.

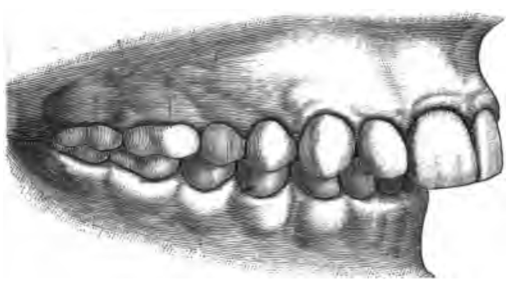
DR. H. F. HAMILTON.

Internat'onal Dental Journal, June.

The case I present is a common one, but the treatment is, I think, new. The patient, a boy of thirteen, had the condition of teeth shown in model marked No. 1. The lower jaw was receding, and the upper front teeth were so prominent as to prevent the easy closing of the lips, giving the face the weak expression characteristic of these cases.

Pulling in the upper front teeth would only improve the facial appearance slightly, so I determined to try throwing the whole lower jaw forward the diameter of a bicuspid. This I accomplished easily, so that in four months the condition was as shown in model No. 2.

FIG. 1.



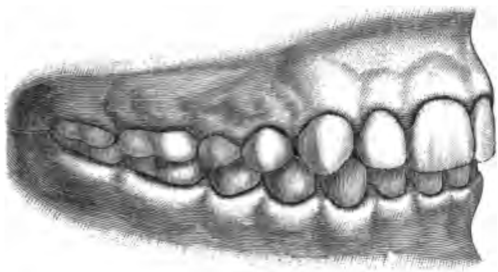
You will understand what was done by noticing the articulation. In No. 1 the superior second bicuspid strikes in front of the inferior second bicuspid. In No. 2, you will notice, it sttikes behind. The same change is, of course, shown with all the other bicuspids and molars.

It was finished nearly six years ago, and I have watched it carefully before reporting. The teeth have not changed, and the wonderful improvement then shown in the boy's appearance has increased, the face being now strong, rather than weak.

The method used was simply a rubber plate fitting the roof of the mouth and over the bicuspids and first molars, where it was made thick, and with depressions to receive the cusps of the lower teeth. But these depressions, instead of being directly over the cusps, were slightly in front, so as to throw the lower jaw forward when closed, by the action, as it were, of a series of inclined planes.

A plate was made also for the lower jaw on the same plan, and worn alternately to keep the teeth in place, and to avoid the injury likely to come from long and continuous wearing of plates.

FIG. 2.



At the end of four months the second molars, not being covered by the plates, had grown together so as to articulate when the plate was in place, and the result of this change was that the patient could not close the teeth in the original manner. The changed position was the only comfortable one.

The plates were worn but little after this, nor were stay plates of any kind necessary. In the four months time, three or four plates were made. The upper and lower plates were worn alternately.

ROBERTS' REGULATING APPLIANCE.

DR. H. E. ROBERTS.

Dental Office and Laboratory, May.

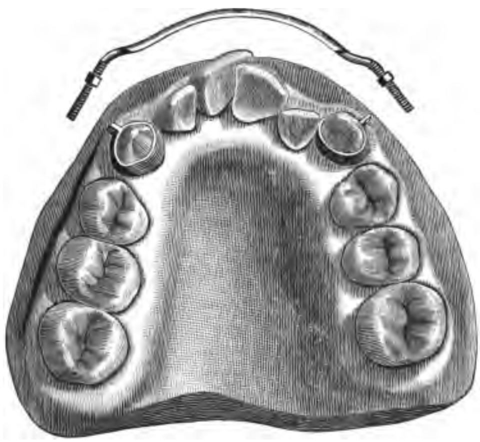
A very satisfactory and comfortable arrangement for moving any or all of the six front teeth, either in or out, is made by cementing eyelet bands to the canines, then out of half round platanized gold wire make a bow and bend to about the curve which you want the teeth to come to when in place.

A band with an eyelet is made in a few minutes at the chair by taking a piece of platinum as wide as you want the band, and long enough to go about 1½ times around the tooth and of about 32 gauge.

Put the strip around the tooth with the ends projecting out, with a pair of flat pliers, the jaws of which are smooth, pinch the

ends together flat, the jaws of the pliers being pressed firmly against the tooth. Take the band off the tooth and cut off one of the ends about 1-16 inch from the band and lap the other end over it and pinch the parts together, and solder over the alcohol lamp with gold, when you will have a band which will fit the tooth, having a projection on one side, through which drill a hole, and file smooth for an eyelet or bend it over and make a hook.

File the ends of the bow square and run a thread upon them, so they will pass freely through the eyelets in the bands; make a nut out of heavy gold plate to fit the screw thread on the bow. You can make a tap for the nuts out of an old excavator by draw-



ing the temper and filing square with a long taper and running a thread upon it, with which you can tap a hole drilled in gold plate, from which make the nut. The eyelet must be so made that the nuts can be easily turned when the bow is in place; the nuts are placed either in front or back of the eyelet, depending how the teeth are to be moved.

In using this arrangement, they are left loose until the bow is firmly tied to the teeth, when they are tightened up. You use the spring of the bow, and the patient can help a great deal in keeping the nuts tight with a little wrench or key. When the bow is in place, it should rest across the centre of the front tooth or nearer the gum, and under no circumstance should it draw away from the gum or have to be sprung up in tying, or you will elongate the tooth. I know of no way by which a tooth can be elongated easier

than by such an arrangement. The jaws can also be expanded as far back as the molars.

If the bands are cemented to either or both the bicuspids, it may be difficult to keep the bow in position over the incisors, in which case make a band to fit the most prominent tooth, and instead of drilling a hole, file a notch in the projection on the band in which the bow will rest, and being tied down will be held firmly in place. In a great many cases there is more pain caused by the appliances getting out of place than in moving the teeth.

These are casts of a case where nothing else was used, and corrected as far as I cared to go at the time, in less than three

months; most of it was done in six weeks. The patient lived about 100 miles out of the city.

Frequently, when you want an attachment to a back tooth, you will find a cavity or filling in which you can cement a pin or hook, or use crown cavities in the molars, and connect them with a bridge cemented in the cavities with hooks coming over the side of the forward tooth between the cusps, making a T shaped piece with the ends bent over the side of the tooth. Any appliance placed upon the front teeth and taking all the force of the bite, the molars not coming in contact, and worn for some time, will either enlarge the angle of the jaw or cause the molars to elongate, consequently opening the bite of the front teeth, a thing to be avoided and hard to correct if it is not desired. A band should not be left around a tooth for any time without being cemented, owing to the danger of decay.

PROTRUSION OF THE INFERIOR MAXILLA: A CASE IN PRACTICE.

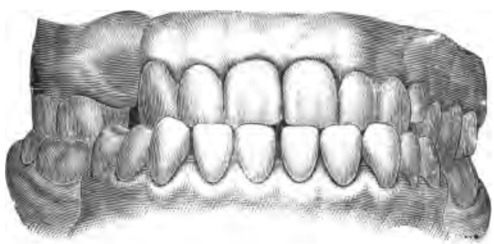
DR. E. HENRY NEALL.

Dental Cosmos, December.

The correction of this deformity is a part of dental science that has well been classed as difficult and tedious, requiring much patience from both patient and operator. Many writers on this subject consider it well-nigh impossible if the person is above middle life.

The case I wish to describe is that of a lady thirty-two years of age, her mouth having the appearance as shown in Fig. 1, the eight anterior teeth of the lower jaw closing outside the upper arch, having been in that condition since the teeth were erupted, and a constant source of annoyance and chagrin.

FIG. 1.



Having a knowledge of her family, and knowing that her father and an aunt were affected in like manner, although in not so marked a degree, I concluded that it was a hereditary trait, and that it would be useless to attempt to correct it. I so advised her on the occurrence of each of her visits to my office, but as often the question was asked, "Will you try what can be done, as I am willing to bear pain and discomfort if the end can be gained?"

The inferior first molars having been extracted many years before, I supposed that I should be able to press the anterior teeth backward, utilizing the spaces between the bicuspids and molars; but such was not the case, as, after the completion of the work, the spaces between these teeth had not materially lessened.

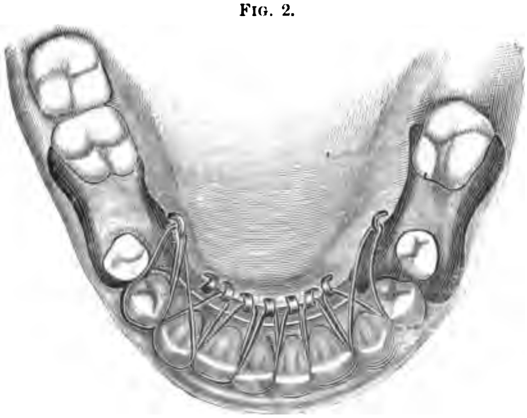
Before commencing with the work, I thought it better to get the opinion of a brother practitioner who has had much experience and success in correcting dental irregularities. After a careful

examination and study of the case, he stated that "he believed it to be amenable to improvement, but it would be a long and tedious case, requiring considerable patience, and most probably the construction of a number of appliances, and might take eighteen months or two years to accomplish."

Having this statement before her, with all the discomfort it implied, she still insisted that I should make a trial, and, more to please my patient than with a hope of success, the work was begun.

The first and only appliance for the lower jaw (Fig. 2) was placed in position December 15, 1890, and consisted of a frame of

FIG. 2.



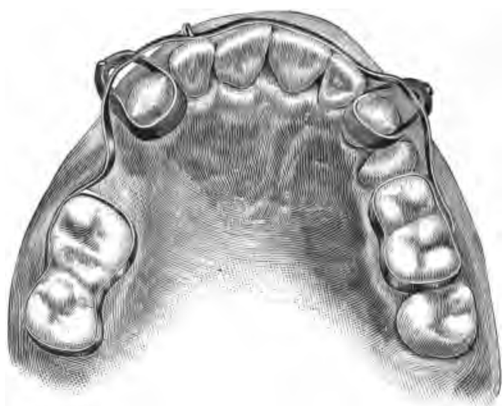
platinized gold, having hooks soldered to the inner part and setting well back of the teeth, being held in position by vulcanite attachments surrounding and covering the molar teeth on each side, which also served to open the bite. These were cut away on the occluding surface from time to time, as the changes produced in the articulation rendered necessary. Rubber bands cut from French tubing were then placed around each of the protruding teeth and attached to the hooks on the frame. Pressure was also brought to bear upon the body of the maxilla by a cap-bandage, worn day and night, and only removed for a short time at intervals. The patient was instructed to press the jaw upward and backward with the hand. Heroic treatment, ably seconded by the patient, was used from the start.

On the commencement of the fifth week, January 16, 1891,

an appliance was made for the upper jaw (Fig. 3), consisting of a platinized gold frame (with two hooks over the cuspids) extending outside the teeth and cemented by oxyphosphate of zinc to the molar teeth. This was worn just two weeks, and was used to pull forward the cuspids. With this exception, no pressure was used on the upper teeth, as the jaw was normal and did not need to be changed.

During the whole time of the operation, which covered precisely seven weeks and four days (the lower appliance being removed February 6), the patient called every other day to have the frame removed and cleansed and new rubber bands placed on. I have been thus explicit as to the time consumed during the operation,

FIG. 3.



as it has never ceased to be a great surprise to me that the treatment should be followed by such rapid results. Everything seemed to favor the change, as not a band slipped out of position during the entire operation, although I frequently had from fifteen to twenty pulling at once. The two appliances were all that were necessary, and were not in any way changed during the operation. In moving the inferior cuspids I was forced to place the bands under the free margin of the gum, so that the teeth became loose in their alveoli before I could make any impression toward changing their position.

I am led to believe by the success attending this operation that the maxillary bones are amenable to rapid change if pressure is kept up constantly, and by right mechanical appliances. I

know that I have recently moved a superior central incisor three-eighths of an inch in a lateral direction without causing any inflammation of the surrounding tissue, by the aid of the screw-jack in about four weeks' time.

FIG 4.

To the question, What was accomplished? I answer, several changes took place. First, the lower teeth were brought inward and close together; second, a change was undoubtedly made in the articulation of the condyle of the inferior maxilla with the temporal bone; and, third, I believe a shortening of the angle of the jaw took place, which is borne out by a glance at Fig. 4, representing models which were taken immediately after the appliances were removed.

ANGLE REGULATING APPLIANCE.

DR. E. H. ANGLE.

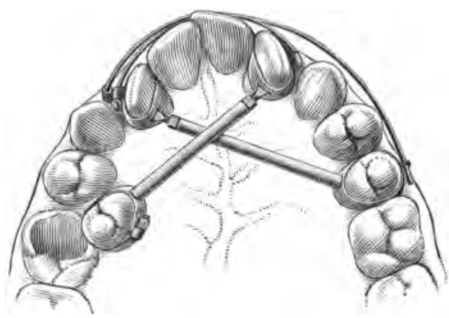
Items of Interest, July.

Undoubtedly facial expression has much to do with deciding the shape of the arch and positions of the teeth.

Fig. 1 represents a case of dental irregularity, in which the cause is directly traceable to the tense and contracted condition of the muscles about the mouth. Especially, the orbicularis oris and the depressor anguli oris, causing undue pressure to be exerted on the laterals and centrals of the superior arch, and resulting in forcing them inward as well as greatly turning them in their sockets. The right second bicuspid is also forced entirely out of its position in the arch.

TREATMENT.—The second bicuspids, being in proper range, were selected as anchor teeth, and encircled by neatly fitting, adjustable clamp bands. On the lingual surfaces of these bands, and at right angles to the line of the axis of the tooth, were soldered small spurs about one eighth of an inch long. Over these spurs was slipped the bases of the sheaths of two Angle's jack-screws. The chisel ends of the screws resting in slots in bands, which had been previously carefully fitted and cemented about the lateral incisors. On the labial surfaces of these bands were also small tubes ("R" set No. 1 of Angle's regulating appliance) on a line with the direction of the dental arch as far distally as the positions of the cuspids would permit.

FIG. 1.



Into the pipe on the right side was slipped one of the rotating levers. The other end was sprung and latched into a hook on the buccal surface of the left anchor band. A similar lever was slipped into a pipe on the left lateral; the other end having been bent sharply at right angles, was carried around and hooked into a pipe which had been soldered tranversely to the pipe on the labial surface of the right lateral. The nuts of the jack screws were now tightened, and it will be seen that the pressure exerted by the screws in forcing the laterals outward and rotating them will be assisted by the spring of the levers.

The central incisors were moved outward and rotated at the same time by means of ligatures firmly securing them to the spring rotating levers. The nuts were tightened every twenty-four hours enough to produce a snug feeling, but always stopping short of causing pain. The levers were occasionally replaced by new ones

to keep up the proper tension. At no time was the pressure wholly relinquished, and consequently the operation was painless, only a slight tenderness being felt when the teeth were used in masticating.

After the teeth had been moved in the desired positions, they were allowed to remain for a week, before the appliances were disturbed, that all tenderness might subside. The appliances were then removed, and the teeth retained by encircling all four of the incisors with neatly fitting bands of German silver, uniting them with solder, and recementing them on the teeth, as suggested by Dr. Guilford, and as shown in Fig. 2. It will be seen that the malposed second bicuspid has not been disturbed. It was my intention to extract it, but my patient so strongly objected I have allowed it to remain.

FIG. 2.

These retaining bands will be worn for a year. It is believed the correct positions of the teeth in the arch, assisted by the favorable occlusion of the lower teeth, together with the firmness they will have attained, will prevent the tendency to return to their abnormal position after the retaining bands have been removed.

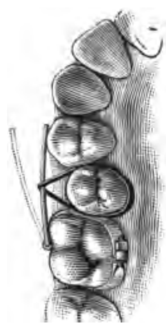
Fig. 3 represents another very simple and practical little device, useful in removing single teeth which are out of position. The case here illustrated represents the second bicuspid inlocked. A neatly fitting clamp band was slipped over the molar, and on the buccal surface of the band was soldered one of the small retaining pipes on a line with the axis of the tooth. A piece of gold retaining wire was bent sharply at right angles and hooked into the little pipe. Over the other end was slipped a delicate rubber ligature (cut from heavy rubber-dam, as suggested by Dr. Black),

which was carried over the crown of the tooth, all as shown in the engraving.

If the wire fits accurately to the bore of the little pipe, it will be held firmly without any support at the other end.

This appliance is especially useful with young patients, or when a single tooth just coming into position needs only a slight amount of pressure to direct it in the proper course. It may be used on the incisors, as well as in the case here shown, and on the

FIG. 3.



lingual as well as the labial side of the arch. But where the teeth have become firm, necessitating greater force, screws are more desirable.

The case here given was that of a young lady, a teacher, who was just starting on her summer vacation. After adjusting the appliance, I gave her several rubber ligatures, with directions to apply them when needed. I did not see her again till the close of her vacation, when she appeared with the tooth in perfect position. She reported having used but one of the extra rubber ligatures, and had suffered no inconvenience.

DENTAL MEDICINE.

FOR RIGGS' DISEASE.

DR. A. W. HARLAN.

Dental Review, December.

Anything that will add to the resources of the dentist in arresting the flow of pus from the pockets around roots of teeth must be considered advantageous to the recipient and user as well.

For a period of ten months we have been using the following solution in the manner indicated: After the roots have been cleansed of all deposits (when present), the edges of the aloeolar process have been scraped with small spoon excavators, breaking down the necrotic process as far as possible. Following this the pockets have been syringed with $H_2 O_2$ until the debris has been removed.

Now, take twelve minims of oil of cassia and add to sixteen ounces of distilled water. Agitate this from time to time for a few days at a temperature of 70° F., or upward. Very soon the oil will be dissolved in the water. To each ounce of the above add five minims of the officinal dilute sulphuric acid. Agitate this until thoroughly dissolved.

This solution is to be injected into the pockets carefully and slowly, having previously dried them as well as possible with paper cones. The solution is astringent and stimulating, and, according to the latest experiments, it is a bactericide of positive value. Should the teeth feel sensitive the mouth may be rinsed with lime water or soda water or any other alkaline fluid, as weak ammonia water or soap water.

We have continued this treatment at intervals of four days for from four to five weeks with most excellent results. In all cases where the teeth are very loose they must be made firm by wiring with pure gold wire or banding them with narrow gold or platinum bands cemented to the teeth.

When the acidity is too pronounced the treatment is alternated with a 2 per cent. solution of zinc iodide in water. When there is much inflammation in the beginning of the treatment, washing the pockets with boroglycerine water, one to ten, for four or five days consecutively will be of advantage. When great pain is felt on account of the depth of the pockets, inject one minim of vinum opii into each pocket when the pain will quickly subside. Holding hot water in the mouth from three to five minutes will also relieve pain.

COCAINE ANÆSTHESIA.

DR. E. L. CLIFFORD.

Dental Review, December.

In writing on Local Anæsthetics, the author quotes Prof. L. H. Adler, who, after much correspondence with leading men, gives the following conclusions with reference to cocaine as an anæsthetic:

In minor surgery cocaine is valuable in all operations, hypodermatically, in which the circulation can temporarily be arrested, and in which free bleeding can be encouraged, at the completion of the operation. Freshly prepared solutions only should be used, and they combined with some mild antiseptic, preferably boric acid. The syringe should be perfectly aseptic; a four per cent. solution is of sufficient strength for hypodermatic use. Where the circulation cannot be controlled, extreme caution should be observed.

The dose injected should be appropriate to the extent of the surface desired to render insensitive. It should not exceed in any case 1 to 1¾ grains.

It should not be administered in cases of heart disease, in chronic affections of the respiratory apparatus, or in nervous subjects.

It should be injected into the interior and not under the derm of the mucous membrane or skin.

The injections should always be given in a recumbent position, and the patient only be raised when the operation is to be performed upon the head and mouth, and then only after anæsthesia is complete.

The cocaine should be absolutely pure, its mixture with other alkalies forming highly poisonous compounds.

It should be injected in divided doses, with a few minutes' interval: "Fractional injection" renders it possible to guard against the production of sudden symptoms of poisoning.

CREAM DENTIFRICE.

Dental Office and Laboratory, March.

Castile soap, in fine powder	½ oz.
Prepared chalk	1 oz.
Oil of rose geranium	8 drops

Glycerin, a sufficient quantity.

The amount of glycerine of course determines its consistence. If for collapsible tubes it should be made quite soft.

Whether oil of rose geranium or some other oil be used as a flavoring, is of course a matter of taste. Both wintergreen and peppermint are popular flavors, while spearmint is probably more grateful to many mouths than either. A pink color may be given to the preparation by the addition of a small quantity of cochineal coloring.

ROSE DENTIFRICE.

British Journal Dental Science, July.

Precipitated chalk	12 oz.
Prepared chalk	6 oz.
Powdered orris	6 drs.
Essence of vanilla	3 drs.
Tincture of coumarin	6 drs.
Tincture benzoin	3 drs.
Ammonia (stronger)	1 dr.
Carmine	1 dr.
Otto of rose	12 minims.
Oil of cloves	12 minims.
Glycerine	3 oz.

or a sufficiency.

PRESERVATIVE DENTIFRICE.

British Journal Dental Science, April.

Precipitated chalk	750	grains
Carbonate of magnesia	28	"
Borax	30	"
Powdered almond soap	250	"
" orris	76	"
Thymol	1	"
Camphor	5	"
Oil of peppermint	50	drops
" cloves	25	"
" lemon	25	"
" eucalyptus	25	"
Creosote or carbolic acid	10	"

Mix the powders thoroughly. Dissolve the thymol and camphor in sufficient spirit, and add; then also the rest of the ingredients, and mix well together.

CAMPHO-PHENIQUE DENTIFRICE.

Prepared chalk	16	parts
Cuttle-fish bone	4	parts
Myrrh	2	parts
CAMPHO-PHENIQUE	4	parts
Lake or rose pink	1	part.

PASTE DENTIFRICE.

Pharmaceutical Record.

Finest chalk	16	ounces
Powdered white castile soap	4	ounces
Powdered borax	2	ounces
Powdered orris	16	ounces
Powdered talc	16	ounces
Glycerin	16	ounces

Perfume to suit. Water to desired consistence.

CITROLEINE DENTIFRICE.

Dental Office and Laboratory, November.

Preciptated chalk	1 lb.
Powdered sugar	2 oz.
Powdered orris	4 oz.
Cuttle-fish bone	2 oz.
Bicarbonate of soda	2 oz.
Oil of lemon	2 drs.

First tint the precipitated chalk with a concentrated tincture of saffron and then spread on paper to dry. Then take the soft portion of the fish bone, which can be scraped off with a knife, place in a mortar with the sugar, rub well down to a fine powder. To this gradually add the powdered orris-root, bicarbonate of soda, and oil of lemon. Mix thoroughly, then gradually incorporate with the chalk by working in a mortar, or mixer, or sifter.

RHATANY DENTIFRICE.

Chemist and Druggist.

Pulv. iridis flor	6 ounces
Pulv. os. sepiæ	6 ounces
Pulv. cretæ præcip	24 ounces
Pulv. krameriæ	9 ounces
Carmin	½ drachms
Boracis	3 drachms
Pulv. antimonialis	6 ounces
Ol. rosæ virgin	24 drops
Ol. neroli	16 drops
Ol. cedrat	8 drops
Ol. cinnamom	8 drops
Ol. caryoph	8 drops
Ol. lavend. ang	4 drops
Ol. pimentæ	4 drops
Tinct. myrrhæ	6 drachms
Extract violæ	6 drachms
Magnes. carb. powd	6 ounces

Mix well, and pass through a fine drum sieve 20 times.

QUININE DENTIFRICE.

Chemist and Druggist

Pulv. rad. iridis flor	12 ounces
Pulv. cretæ præcipitat	36 ounces
Pulv. os. sepiæ	3 ounces
Ol. rosæ virgin	80 drops
Quininæ sulphatis	3 drachms
Pulv. saponis hispan (fresh)	2 ounces
Ol. cinnamomi	75 drops

All the powders to be finely levigated and mixed in the above order, the oils being intimately mixed before passing the powder through a fine sieve three times.

FRENCH DENTIFRICE.

Chemist and Druggist.

Pulv. camphoræ	16 ounces
Cretæ præcipitat	5 pounds
Carmin	½ drachm
Ol. rosæ virgin	2 drachms

This should be passed through a fine drum sieve after being thoroughly mixed. To bring out the beautiful color the dentifrice should be passed through the sieve twenty times. It is an elegant preparation properly prepared.

DENTAL TINCTURE OF MYRRH.

Chemist and Druggist.

Macis. contus	50 grains
Myrrh. opt. cont	250 grains
Rad. krameriæ cont	250 grains
Glycerni	½ ounce
Sp. vin. rect	½ ounce

Macerate for fourteen days, shaking every day or every second day once during the day, then filter.

Directions: Half a teaspoonful in a wineglassful of water (tepid in winter) will be found a most effectual astringent wash for teeth and gums. It should be used every night and in the morning.

AROMATIC DENTIFRICE.

Chemist and Druggist.

Megnes. carbon. powd	7 ounces
Cretæ præcip	24 ounces
Pulv. iridis flor	4 ounces
Pulv. sapon. hispan. (fresh)	4 ounces
Carmin	20 grains
Ol. caryoph ang	2 drachms
Ol. cinnam. ver	1 drachm
Ol. organi pallid	1 minim
Ol. geranii	1 drachm
Ol. rose virgin	1 drachm
Ess. moschi	1 drachm

Mix well and pass through a fine drum sieve several times.

ANTISEPTIC DENTIFRICE.

Chemist and Druggist.

Pulv. rad. irid. flor	3 drachms
Pulv. glycyrrh. decort	2 drachms
Pulv. sapon. hispan. (fresh)	6 drachms
Cretæ præcipitat	1 ounce
Acid boracic	2 drachms
Acid benzoic	25 grains
Magnes. carb. pond. ad	4 ounces
Ol. eucalypti	20 minims
Ol. rosæ virgin	5 minims
Ol. menth. pip. ang	5 minims
Ol. limonis	10 minims

Mix in the order written, and pass through a fine drum sieve. If desired colored, add 20 grains of carmine, which gives an elegant tint.

CARBOLATE OF CAMPHOR.

Carbolic acid, by weight	1 part
Camphor, by weight	3 parts

ARISTOL CHLORO-PERCHA FOR ROOT FILLING.

DR. R. M. CHASE.

International Dental Journal, January.

For filling roots put two grains of aristol in one drachm of chloro-percha.

TEMPORARY CAPPING FOR EXPOSED PULPS.

DR. H. MILLING.

Ohio Journal Dental Science, October.

℞ Boric acid;
White wax aa 1 part;
Oil sweet almonds;
Paraffine aa 2 parts.

MEDICATED RAISIN FOR PERICEMENTITIS.

DR. W. H. GAGE.

Items of Interest, January.

Take a raisin, cut it lengthwise into halves, remove the seeds from the half to be used, and into the pulp, with suitable instrument, work ground capsicum and ground ginger, equal parts, and apply the medicated side directly to the root of the tooth affected. The skin of the raisin prevents the medicine from passing through and irritating the cheek and lip. They stay well where placed and easily adapt themselves to the unevenness of the gum.

FOR PERICEMENTITIS.

DR. VAN WOERT.

International Dental Journal, April.

Tincture capsicum 1 part, wine of opium 2 parts. Apply locally, on cotton or blotting paper.

PULPITIS, CAUSES AND TREATMENT.

DR. I. A. FREEMAN.

Dental Review, May.

Pulpitis, or inflammation of the pulp, is a disease the dentist is frequently called upon to treat. In many instances it is quite difficult of correct diagnosis, owing to the fact "that the dental pulp has not the sense of location of touch," being encased in the inflexible bone covering. Much reflex pain may be had and nothing to indicate what tooth may be the one involved or seat of the disturbance, hence the operator will sometimes be put to his wit's end to find or locate the trouble. Sometimes it will be necessary to wait for developments, for if it be that the pulp of any tooth be in a stage of inflammation, it will as a rule pass on to suppuration. This will in most cases be the result. Then as there are the different stages of decomposition there will be corresponding disturbance in the surrounding membranes; the peridental membrane becoming involved will very soon indicate the offending pulp.

The term pulpitis is a word that is one of convenience used outside ot medical dictionaries, a word known only to the dental profession. The causes of pulp irritation are quite numerous; among them are dental caries from the most superficial to the deep-seated, where there has resulted full exposure to foreign substances, fluids, etc. Where these may, by the process of endosmosis, have entered the pulp chamber, or the forces of mastication may have proved too powerful for the weakened covering, and so from yielding walls the pulp has received injury, which becomes, by the constriction of space, an irritant, resulting in inflammation, prolonged, intense pain being the result unless the pressure upon the pulp be immediately relieved by excavation and opening up fully the pulp chamber or lessening its volume by evacuation of the gorged vessels by incision of the tissue, and both should as a rule give desired relief from pain.

Traumatic affection of surrounding parts may result in inflammation of the pulp, especially in young patients. Operations upon the teeth in preparation of cavities, excavating the diseased tissue resulting in partial or complete exposure; attempts to protect the pulp by introducing some form of filling material, causing by its irritating properties either galvanic, escharotic, dessicating, or con-

ducting power and also carelessness in introduction, too great force being exerted in placing the materials in position.

Predisposition to inflammatory action has much to do with the phenomena of pulpitis.

I here refer to rheumatic tendencies, or a predisposition also to the condition noticed in young girls about the age of puberty, who take on inflammatory diseases readily. Practitioners generally have noticed that greater disturbance is seen in thermal changes at this time, and there is probably greater tendency to acdity of the secretions, which may and does promote galvanic action, if gold, tin or amalgam are in the proximal surface or in close proximity to each other. Inflammation may be general or local, active, displaying considerable energy by producing severe pain, or may be what may be termed a low state or condition of inflammation, the disturbance being non-expressionless, so to speak, a condition which may exist for some time with so light inconvenience to the patient as to be quite forgotten at times, passing on to the stage of suppuration, or may become of the nature of dry gangrene.

Pulpitis may and does occur when teeth are being moved by regulating appliances, not always when force has been applied with which the teeth have been moved rapidly, but when the movement has been slowly and carefully performed, resulting in what has been termed dry gangrene or mumification of the pulp. Not always so, but this condition is seen where from the color of the tooth we know the pulp has died, and when opening into the pulp canal nothing is found save the dry, or nearly so, remains of the defunct pulp. This tooth has never given the slightest inconvenience it may be. Dry gangrene is seen frequently where there has not been any effort to regulate or change the position, and when able to get a history we hear that a blow was received at some time previous, it may be years since, and no inconvenience during the subsequent time save a slight uneasiness at times. The too energetic application of force, in gaining space for fillings, results in pulpitis to a greater or less degree. Pulp nodules are a source of irritation.

The treatment for the different phases of pulpitis are somewhat variable.

In the case of superficial caries the proper procedure is to remove the diseased tissue and apply a remedy containing a disin-

fecting and anæsthetic property; at the same time, ten per cent. carbolic acid, oil of cloves, oil of cajuput, oil of cassia, contain these properties sufficiently for these conditions. Then fill the cavity, thus excluding foreign irritating substances or fluids. In more advanced stages of dental caries a non-conductive material should be placed upon the floor of the cavity, it having previously been treated as suggested for superficial cavities.

Treatment for pulpitis, which is the result of deep-seated caries, the pulp not fully exposed, or if it be very slightly so, would be to clear cavity of the debris, wash with quite warm water. Pond's extract of hæmmamalis should also be warm. A mild solution of boracic acid thrown gently into the cavity with syringe, the object being to clear the cavity of all extraneous matter, using those agents that will be of a palliative nature. Peroxide of hydrogen will be found helpful here. All decalcified dentine should be carefully cut away, meantime the cavity should be protected from fluids of the oral cavity by the rubber dam being adjusted. When all this has been satisfactorily performed, the cavity dried, then bathe the cavity with carbolic acid, about twenty per cent. solution. Again dry, flow over the floor of the cavity a thick solution of gutta-percha and chloroform, allow time for pretty perfect evaporation of the chloroform, then varnish the entire cavity with copal ether varnish, or you may use sandarac varnish. This is to prevent the drinking up of the moisture of the tooth or pulp by the material that follows, which may be oxychloride or oxyphosphate of zinc, which should be of a consistency to be drawn over the floor of the cavity rather than forced down upon the exposed pulp or yielding floor or wall of cavity, thus saving the crowding of the pulp. The better plân is to use a small portion at first, giving time for hardening, and add more as it is needed to make a strong floor and be of depth or thickness to aid in breaking up thermal changes or shock. This course is to be pursued where there are no complications to be met with, as, for instance, where there is so great exposure as to determine the necessity of expiration of the pulp, which would be usually performed by first giving treatment to reduce inflammation, and then to devitalize by the application of arsenious acid, which should always be held in position by using first a drop of chloro-percha over arsenic, which should be allowed to harden; apply carefully oxyphosphate of zinc for filling cavity,

thus giving an inflexible covering so that pain may not result when mastication is going on. Of course, later the pulp should be removed, not forgetting the application of glyceride of tannin to bring about the most desirable condition, the removing of the pulp entire. Should death of the pulp from inflammation have resulted, the usual treatment for putrescent pulp is of course indicated. In all conditions of pulpitis a hot mustard foot bath is helpful, also counter-irritation may aid in aborting strangulated pulp by determining the blood to other parts. Saline cathartics have been recommended, and no doubt may have good effect upon plethoric patients.

TOOTHACHE: ITS DIAGNOSIS AND TREATMENT.

DR. A. V. ELLIOTT.

International Dental Journal, April.

Toothache proper means inflammation either of the pulp, or alveolo-dental membrane. The first and most important thing to consider when a case is brought before our notice is the diagnosis. To the patient who comes for relief, no matter what the cause of the pain, it is to him simply a toothache and nothing more, and that is sufficient. But to us as diagnosticians it is a matter of importance to know for a certainty what the real cause of the pain is: whether, for example, it arises from irritation of the pulp of the tooth from exposure, or of the periodental membrane, or because of some obscure pathological condition elsewhere. The diagnosis is not always an easy matter. We sometimes have to grope our way very cautiously to arrive at a full assurance of being on the right track. We must isolate the seat of trouble by elimination or exclusion. Ordinarily, when the patient presents for relief, we have little difficulty in discovering what the matter is. We find the cavity, and within it a pulp in a state of irritation; the proper remedy is applied, and the patient goes gratefully away. But we have mouths presented to us sometimes which embarrass us. There are crowns in every state of disintegration; root-canals in all stages of putrescence and the development of gaseous products. The patient suffers, and we are

expected to give relief. We must get at the seat of this particular trouble by elimination, and leave the other potentialities for future development.

Again, there are more cases in ordinarily good mouths having no open cavities, but many teeth filled. There is at first sight no appearance of anything wrong, yet the patient suffers. The pain may come from exposure or near exposure of the pulp through a prolongation of a cavity not apparent to the eye, or the pain may arise from a metal filling placed too close to the pulp without adequate protection, or it may be developed from incipient inflammation about the root of a dead tooth. Impacted wisdom teeth are frequently painful to the patient, and osseous deposits in the pulp-chamber and canals; or the pain might have its origin somewhere else besides the teeth, and is felt in the tooth or teeth through the reflex action of the nerves. Rheumatic, gouty, hysterical and neuralgic people, and women during gestation, are subjects of these irregular phenomena. I might include among the possibilities of pain from an obscure source fillings of different metals in contact, or near by, producing an electro-chemical action.

In obscure cases we can be helped at times by questioning the patient as to the history of the trouble.

In reducing this matter of diagnosis and treatment to general principles, let us commence with the simplest first. Fortunately for us, these cases of difficult diagnosis are rare. The patients who come to us for relief are usually suffering from either inflammation of the pulp or of the alveolo-dental membrane.

Remove the debris and decalcified dentine in the cavity, being careful not to wound the pulp, and then fill with oxyphosphate, leaving enough of the decalcified dentine over the nerve to protect it, after first sterilizing it with bichloride of mercury. If the pulp should be found to be exposed, or nearly so, make a medicated soothing pad, consisting of eugenol, oxide of zinc, and a few threads of Japanese paper or cotton-wool. This is placed next to the pulp, and, after taking up the surplus moisture from the pad with absorbing paper, fill the cavity with soft cement with as little pressure as the case will allow. I prefer Weston's for this kind of work; vaseline is good also; but a cement which does not knead up softly should not be used. There are many other ways of treating such cases, but this seems to answer all the conditions.

If a case presents itself where the tooth has given pain not persistent, and we find a prompt response to moderately cold water and yielding to a soothing application, treat in the same way as for the other class, hoping for the best. But so much depends on circumstances and the individual case, the constitution and health of the patient, the location of the cavity, whether accessible or not. In this class we must use our judgment and be careful. If the patient has a violent and jumping toothache, aching persistently, especially at night in bed, the proper thing to do is to devitalize the pulp. First apply something to reduce the pain, such as carbolic acid and morphine, oil of cloves, eugenol, or Rosenthal's remedy. Eugenol seems to leave the pulp in a receptive state for the arsenic. The latter leaves the dead pulp in a better state for removal. At times neuralgia is more or less associated with trouble arising from inflammation of the pulp, which, however, usually disappears after direct treatment to the tooth.

Often when a case is presented, it is difficult at first sight to know if it is really a case of inflammation of the pulp, or if, it being dead, inflammation of the alveolo-dental membrane has commenced. The patient is feverish and apprehensive, and incapable of giving much assistance in the diagnosis. If it is a case of live or dead pulp, where there is a cavity of greater or less depth, test with cold water, watching the expression of the patient; if the pulp is alive there is generally no mistaking the fact, and that point is settled; but in those cases where the pulp is affected by an improper filling which has developed trouble, we may be obliged to arrive at the truth by the process of exclusion. It is best to decide that where there is no marked indication there is inflammation of the alveolo-dental membrane. We must search for cavities, tap suspected teeth to develop tenderness if any exists. Study the color of the gum, interrogate the patient as to the symptoms, and when we find as a result of the examination that a certain tooth is more sensitive than others to concussion, and that the patient complains of a dull, heavy pain, and reports that the tooth seems to be longer than the others, and that drinking of hot liquids was painful, and cold not so, we may, with confidence bore into that tooth to give a vent to the confined gas, thus giving relief to the patient. If the vent gives no relief by removing the pressure, we must "do all things to conciliate; failing in that, all things to crush." Toothache of

this kind is one of the most distressing ills that human flesh is heir to, and owing to its situation and the nature ot it, it is often difficult to give that speedy relief the patient longs for. Owing to the pain, and the absorption into the system of more or less poison, constitutional disturbance of a greater or less degree is associated with this kind of trouble, and must be taken into consideration.

The first thing indicated is to reduce the inflammation and prevent its further progress. If suppuration has not already advanced too far, blistering pads (make of red pepper and cocaine, sewed up in little bags nearly covered on the surface with chloropercha, or strips of felt covered with wet gum tragacanth and pepper dusted over that; the gum softens in water, but does not dissolve), aconite and iodine, or strong iodine, can also be applied. Recommend a hot foot-bath, a dose of Epsom salts, and six-grain doses of antipyrin, or apply one or more leeches over the root. A lotion of cocaine, aconite, chloroform, and iodine, rubbed somewhat forcibly on the gum with the end of the finger, has a benumbing effect. Failing to get relief within a reasonable time by our efforts to reduce the inflammation, we must now turn our attention to hastening the process of suppuration and the discharge of the pus. Hot poultices, [We presume the writer means upon the gum. Poultices upon the cheek are not admissable.—ED.] having two or three drops of laudanum on each, should be applied, so as to assist the pointing to the right direction. If the pain is persistent in spite of these efforts, it is well to give an opiate. To be taken before going to bed, fifteen or twenty drops of laudanum, or chloral hydrate ten grains, and bromide of potassium ten grains. Usually after the sleep thus produced the patient has no more pain. A subcutaneous injection of morphine (one-sixteenth of a grain) would answer the same purpose, and sometimes better.

A lady sent for me who was suffering greatly on account of an upper wisdom tooth on which had been placed a Richmond crown. The pain defied every effort to reduce it until she had received two injections of morphine, after which, on awaking from her sleep, the pain had entirely left, and there was no suppuration. In these cases of crowns and bridges we have not the alternative of extraction.

There are hopeless cases where the use of the forceps would be a mercy, and a possible insurance against much misery in the

future. But judgment, qualified by honesty of purpose, should rule before the dentist yields to the suggestions of the patient and his own convenience, and extract a tooth that might, if properly treated, be retained as a useful member of the dental arch.

Erosion or wearing down of the crowns often gives rise to more or less annoyance, if not positive pain, to the patient. This condition of things, often found in the mouths of strong and healthy people, indicates a want of proper tone and solidity of the teeth, or of a solvent in the mouth which acts upon them. The only thing to do is to cover with gold. Chloride of zinc gives temporary relief, and so does the nitrate of silver. But if the case be beyond filling, the nerve should be killed and removed. The same with erosion on the buccal sides of the teeth. The solvent in this case must come from the mucous membrane directly opposite and in contact. In cases where all of the teeth seem to be sound, but their necks exposed and the gum in an unhealthy state, it is difficult sometimes to locate the pain. The patient himself is not sure of the tooth. Sounding gives no response, cold water sets all the teeth aching, as does cold air. Ordinarily, the pain passes away with the effects of the exciting cause; at others, however, it is persistent. The cause of it is exposure—not enough covering over the cementum, which is not as thick over the nerve or as dense as dentine, and needs the further protection of bone and gum. In such cases we must be patient in the diagonis to isolate the tooth giving the present trouble. I have given relief in such cases by boring into the tooth and inserting a little eugenol, sealing up with gutta-percha. This method has the advantage also of testing the tooth as to its vitality. In some cases, however, where the destruction of tissue is very great, the only thing to do is to kill the pulp after being sure of the right tooth. In all cases of this kind, and in those where sympathy might tend to mislead one, there is nothing for it but the exercise of patience and perseverance.

We must in these cases, which include persons of the rheumatic and gouty diatheses, women in gestation, etc., proceed with caution, and in cases of doubt do too little rather than risk doing too much; be governed by general principles, and for the moment treat the parts topically, and recommend systemic treatment.

PAIN OBTUDENT.

Dental Review, April.

℞	Acid Carbolic	gr. XX.
	Ol. Sassafras	Min. XXX.
	Oleate Cocaine	4 p. c. Min. XV.

M. Sig. Use on an exposed pulp or in a sensitive tooth or on the necks of teeth.

SYRUP OF IRON CHLORIDE.

International Dental Journal, March.

Dr. G. W. Weld highly recommends the syrup of iron chloride in the place of tincture chlorate, as not being deleterious to the teeth in its administration, and equally as efficacious.

BICHLORIDE OF MERCURY.

DR. GEO. S. ALLEN.

International Dental Journal, March.

The author keeps a bottle of one per cent. solution from which he makes fresh as needed, one to one thousand solution, but uses rose water, which makes it agreeable to patients. He never uses an instrument unless it is washed in the solution.

RIGGS' DISEASE REMEDIES.

International Dental Journal, April.

Dr. Darby derives much benefit from the use of Robinson's remedy (carbolic acid and caustic potash). Cotton saturated with the remedy is placed in each pocket and allowed to remain as long as it will.

Dr. Dean says a piece of quill toothpick in a nerve broach holder is an excellent thing to convey medicaments into the pockets.

Dr. McQuillan, in connection with Robinson's remedy, prescribes chloride of zinc six or eight grains to an ounce of rose water to be painted around the gums twice a week.

Dr. Rhefus, in connection with massage, gently applied at first, uses a paste of aristol or iodoform or iodol with oil of cassia, applied to the pockets.

Dr. Pierce has a favorite prescription which he applies to the pockets. It is aristol mixed with equal parts of tincture of iodine, oil of gaultheria, oil of cinnamon and carbolic acid.

Sulphate of copper. In many cases of this disease, this remedy acts well its part. Apply to the pockets with a small cotton swab not oftener than twice a week.

FORMULAS FOR RIGGS' DISEASE.

DR. L. BETTES.

Items of Interest, March.

Formula of Dr. Riggs:

℞	Carbolic acid	1 part
	Tinct. iodine	1 "
	Glycerin	10 parts.

Rub well in a mortar, and gradually add chloride soda, 6 parts.

Formula of Dr. N. Dodge:

℞	Acid sulphuric	ʒj
	Water	℥ij
	Soda biborate	℥iv

Formula of Dr. F. Y. Clark:

℞	Carbolic acid	ʒv
	Alcohol	℥iv
	Glycerin	℥j
	Oil pimentos	℥iij
	Sol. red aniline	℥ij

FOR SENSITIVE DENTINE.

MR. J. STOCKEN.

Tannin,	
Tr. arnica	aaʒjj
Tr. myrrh	℥j

LOCAL ANÆSTHETIC.

Items of Interest, April.

"Old Dentist" reccmmends the following:

Cocaine hydrochlorate	20	grs
Sul. atropia	1-10	gr
Car. acid crystal	10	grs
Chloral hydrate	5	grs
Water	1	oz

HYDROGEN PEROXIDE.

DR. D. D. PEABODY.

International Dental Journal, March.

To be effective this agent should contain at least twelve volumes of oxygen to one of water; and as the oxygen escapes or separates from the water as freely as the carbon dioxide from the bottle of ginger ale, it must be kept closely stopped and not allowed to remain at a temperature above 65° or 70° F. It is better to procure in four ounce or eight ounce cork-stopped bottles, for ground glass will blow out, and even the corks must be tied in, and should be renewed by fresh ones occasionally, for the efficiency of the oxygen lies in the fact that it is a destroyer. Keep such a bottle in a refrigerator or cool cellar, and use from a small bottle at the case. It is better to shake the large bottle forcibly before opening, to recombine the free oxygen. In view of the great affinity of the oxygen for metals, it should be applied only by means of glass, vulcanite, gold, or platinum, and should never be introduced into a tooth by means of steel or silver instruments. It would seem almost superfluous for me to attempt to instruct as to the occasions when the use of hydrogen peroxide is indicated had I not learned by recent inquiry that many dentists have never even seen it in use. When prepared with not more than one per cent. of hydrochloric acid it is non-irritant on all surfaces except the eye, and elsewhere on healthy tissues produces no apparent effect.

There is one class of cases in dental practice where its use is contraindicated, because it is too effective. I allude to deep-

seated abcesses to which ingress is to be obtained only through a small orifice or fistulous opening. Its application to blood or pus is instantly followed by abundant effervescence, which so distends the soft tissues as to effectually close the orifice or outlet, and the pain produced is intolerable. For the same reason it should not be forced through the apex of a root of a tooth, unless there is a certainty of a free exit. It is invaluable for injection into the alveolar sockets after extraction of diseased roots. The writer has not seen a single case of the long continued soreness and inflammation following extraction which was altogether too frequent previous to its employment. Its effect in the pus pockets so often found in pyorrhœa alveolaris has been very satisfactory. If present at the operating case, the occasions where its use will be suggested will be innumerable; but I can hardly close this somewhat discursive paper without allusion to its value as a bleaching agent. Fill the apex of a root with gutta-percha, and the canal and pulp-chamber with freshly dried aluminum chloride, and saturate with the peroxide. Allow it to remain five or ten minutes, and wash out with sodium bicarbonate. Credit for this formula is due to Dr. A. W. Harlan, and I have yet to find a more satisfactory method.

LOCAL ANÆSTHETIC.

DR. C. V. SNELGROVE.

Dominion Dental Journal, May.

℞ Cocaine hydrochlorate	grs. v.
Acid carbolic	grs. iv.
Gum camphor	grs. vi.
Glycerine pure	grs. xv.
95% spts vini Rect. Q. S. ad	ʒ ii.

With hypodermic syringe inject one or two drops deeply into the gums on inner and outer side of the tooth, and apply over the gums around the tooth, also in cavity of tooth, a piece of absorbent lint or cotton wet in the solution. Wait four or five minutes (by the watch) and the gums can be freely incised and tooth extracted with but little pain.

BANDING TEETH IN RIGGS DISEASE.

DR. H. J. BURKHART.

Dental Practitioner and Advertiser, July.

Make a band of either gold or platinum, 35 gauge and a quarter of an inch wide, made large enough to encircle all the teeth affected, and where there are only a few affected, one or two healthy teeth on each side. Wherever it is possible the rubber dam is applied, and if that cannot be conveniently done, napkins are resorted to and the teeth thoroughly dried. Oxyphosphate of zinc is then thinly mixed and spread or smeared over the labial and palatine surfaces, and the band slipped up about midway between the gum margin and occluding surface. Next, fine binding wire of silver or platinum is slipped through the gum margin, from the labial to the palatine surface, brought between the teeth near the incisive edge, and back to the gum, twisted, and the slack taken up. This is repeated in each space, and when the last one is reached you have all of the teeth firmly bandaged. Care should be taken to allow the patient to close the mouth frequently during the process of wiring, so that loose teeth are not drawn out of position. With the aid of the burnisher, a few blasts of hot air and the removal of surplus cement, the case is completed. This gives a firm, strong, clean bandage, quickly constructed and applied, and comfortable for the wearer.

RIGGS' DISEASE.

DR. E. F. STEVENS.

International Dental Journal, March.

In treating this disease, thoroughness in cleansing is of the greatest importance; in the first place, the deposit must be entirely removed by properly-shaped instruments. It is not well to attempt to complete the treatment at the first sitting, but be thorough in what is done. After the deposit is dislodged from the root, wash out the pocket with warm water, and if the alveolus is involved, use engine-burs to cut away until healthy bone is found, then rinse with hydrogen peroxide, and after being sure all debris is removed, protect the soft tissues with napkins, and with a Donaldson broach

wound with cotton apply caustic paste to the socket as far down as can be reached. Wait two or three minutes, then rinse with warm water, and pack tannin and glycerin paste in the socket. If the pocket is very deep, lance from top to bottom; this will not give pain, as the caustic paste has obtunded the parts. If the teeth are very loose, tie with silk ligature, weaving in and out, so as to make a strong support.

In dismissing patient until next appointment (which should be in two or three days), be sure to impress upon his mind the importance of absolute cleanliness on his part; let him rinse his mouth several times a day with a wash containing half a drachm each of carbolic acid and liquid potassæ in a pint of distilled water. For a tonic, something like Wyeth triple phosphates, or cinchonidia, two-grain pills three times a day, and keep the bowels free by cathartics. At the second sitting, carefully remove whatever deposit was not dislodged at first, and inject hydrogen peroxide into the socket, after which burn out the dead or diseased tissue with the caustic paste, rinse with warm water, and pack as before with tannin and glycerin. As a rule, the brush has been used too sparingly, and we can now do a little teaching as to what we mean by thorough and faithful cleaning; this will bear its fruit at the next appointment.

The number of times a patient requires to be seen depends entirely on conditions, but, as a rule, after the gums have been satisfactorily treated and brought into a condition of comfort, it will not be necessary to see the patient oftener than once in three or four months.

TRI-CHLOR-ACETIC ACID FOR REMOVING SANGUINARY DEPOSITS ON TEETH.

DR. A. W. HARLAN.

Dental Practitioner and Advertiser, October.

Tri-chlor-acetic acid is found in colorless crystals, easily soluble in water or alcohol. It is a powerful caustic, quickly destroying the epidermis or mucous membrane.

It is a product of the oxidation of hydrate of chloral by means of nitric acid. When diluted with water to three per cent.,

it is an excellent local astringent and stimulant. When it is used to soften and decalcify the seruminal deposits upon the roots of teeth, a ten-per-cent. solution in water should be used. It may be neutralized by any suitable alkaline solution, like soda or magnesia, when it is desired to limit its action. It seems to have a peculiar power to soften and remove the sanguinary deposits on teeth, without injury to those organs, or to the tissues.

CAMPHOID.

Camphor	20 parts.
Alcohol	20 parts.
Pyroxylin	1 part.

REMEDY FOR RIGGS DISEASE.

DR. NORTHROP.

International Dental Journal, September.

A saturated solution of sulphate of zinc, a saturated solution of iodide of potassium, equal parts, which in turn is saturated with the crystals of iodine.

CROTON CHLORAL FOR NEURALGIA.

Dental Review, July.

Croton chloral in five to ten grain doses, in pill form, administered three times a day will often relieve facial neuralgia when other remedies will fail. The dose should be diminished after two or three days to five grains or less, as occasion demands.

LISTERINE AND TANNIN.

Ohio Journal Dental Science, December.

Dr. L. P. Bethel says listerine is one of the most perfect solvents for tannic acid that can be found. One ounce of it will dissolve half an ounce of the acid.

EDENTULOUS NEURALGIA.

DR. T. W. BROPHY.

Dental Review.

The author calls attention to one form of neuralgia in the absence of all the teeth, that is a neuralgia which comes from an hypertrophy of the inferior dental nerve, in aged people, as it makes its exit through the dental foramen. It is a most common origin of neuralgia, and, as in other cases, the neuralgia is not often located at its real seat, but may be located some distance from the point of irritation. The remedy is simple; it is to make a saddle-shaped plate so that the pressure will not be exerted upon the nerve as it passes out of the foramen to be distributed to the teeth and gums and parts adjacent.

DEAD BONE SOLVENT.

Ohio Journal Dental Science, December.

Pure scale pepsin	℥ss
Nitro-muriatic acid	℥j
Distilled water	oj

Inject into the sinus, so that it will come in contact with the dead bone, twice a day. The sinus should first be washed out with peroxide of hydrogen.

TO CORRECT NAUSEA FROM TAKING IMPRESSION.

DR. G. V. SNELGROVE.

Dominion Dental Journal, May.

Have a druggist to make some lozenges with one-quarter grain of cocaine in each. Before taking the impression allow patient to dissolve one of the lozenges in mouth and swallow the spittle. If one is not sufficient, give another, allowing time enough for the lozenge to dissolve slowly.

The mouth rinsed with camphorated water will often prove effectual.—ED. COMPENDIUM.

FOR IRRITABLE DENTINE AND PULP INFLAMMATION.

Dental Headlight.

Dr. L. G. Noel says pure wood creosote is his sheet anchor for irritable dentine and for inflammation of the pulp from caries.

THIERSH'S ANTISEPTIC SOLUTION.

Acidi borici .... grs. 76
Acidi salicyli .... grs. 16
Aquæ ferventis .... pt. 1

TOOTHACHE FROM CARIES.

Ohio Journal Dental Science, January.

Carbolic acid
Flexible colodion aa ....1 drachm.

Insert on a piece of cotton.

PAIN AFTER EXTRACTION.

DR. T. F. CHUPEIN.

Dental Office and Laboratory, March.

Where the pain is persistent wash out the cavity and apply on a pellet of cotton, one or the other of the following:

℞ Chloroform
Tinct. Aconite, aa ....ʒ 1.

℞ Tinct. Camphor ....ʒ 1.
Chloroform ....ʒ jj.

℞ Morphine ....grs. jii.
Tinct. Aconite ....
Chloroform ....
Alcohol aa ....fʒss.

Dr. Willson says the most effective and quickest remedy is a strong "snift" of a strong solution of ammonia.

LOCAL ANÆSTHETIC.

DR. FRANK ABBOTT.

International Dental Journal, June.

℞ Tinct. aconiti rad.,
Chloroformi,
Alcoholis, ... aa ℥i;
Morphinæ sulph., ...grs. xii.

Sig.—To be used as a local application.

Two small metal cups attached to the poles of a battery and filled with sponge saturated with this mixture, and applied one on either side of the gum, might render it even more effective in extracting teeth.—ED. COMPENDIUM.

PERSISTENT PAIN AFTER EXTRACTION.

International Dental Journal, May.

Dr. Thomas says, in cases of acute periostitis after extraction, for several hours, the best treatment is hot fomentations followed by washing out the cavity with warm water and applying phenol sodique on loose pellets of cotton.

FOR TOOTHACHE.

Chemist and Druggist.

Finest mastic	6	drachms
Extract of Indian hemp	1	oz.
Chloroform	2	oz.

Mix, and shake occasionally until dissolved.

Hydrochlorate of morphia	30	grains
Menthol	1	drachm
Chloral hydrate	2	drachms
Camphor	4	drachms
Oil of cajuput	2	drachms
Tincture of pellitory to	4	oz.

Mix, and shake occasionally until dissolved; then add the mastic solution and filter.

BETHEL'S MIXTURE.

DR. L. P. BETHEL.

Ohio Journal Dental Science, December.

The author says he finds this solution admirably suited for use in the mouth in various ways. For rinsing purposes, 6 or 8 drops in half a glass of water. To be used for rinsing the mouth before or during various operations, especially scaling and cleaning of teeth. It is pleasant to the taste and antiseptic in its action. A few drops mixed with the powdered pumice used for cleaning, not only makes it more efficient, but renders it an agreeable application. It will be found useful in stronger solution than above for rinsing purposes after extraction of teeth. It is also an efficient and agreeable liquid dentifrice. Being pleasant, its use is appreciated by patients, especially where it disguises a disagreeable odor or taste:

℞	Benzoic acid,	
	Orris root,	
	Cinnamon, pv., ää	¼ oz
	Soap bark	2 oz
	Tannic acid	1 dr
	Borax	20 gr
	Ol. wintergreen	30 m
	Ol. peppermint	1 dr
	Cochineal	¾ dr
	Sugar	4 oz
	Alcohol	12 oz
	Water	20 oz

Mix; macerate six days and filter.

PAIN AFTER EXTRACTION.

DR. D. GENESE.

Items of Interest, December.

Chloroform	1 part.
Tr. Pyrethrum	3 parts.

Apply on a piece of cotton.

ACUTE PERICEMENTITIS.

Dental Review, January.

Bathing the face and neck in hot water in acute pericementitis will prove very soothing in conjunction with counter-irritation and constitutional treatment. Use a large napkin dipped in water about 180° F. do not wring it completely dry; continue this for ten minutes, and give internally teaspoonful doses of fl. ext. gelsemium, minims x., water ℥i., every fifteen minutes until four doses have been taken, then every half hour for two hours. Or, use calcium sulphide in $\frac{1}{10}$ gr. pill until eight have been taken in two hours, then one every half hour for two hours. Relief will follow in a very short time if the treatment is followed faithfully.

NITRATE OF SILVER FOR RIGGS DISEASE.

DR. E. H. STEBBINS.

International Dental Journal, September.

Remove all calcareous deposits from the teeth. With a slender wood point, carry small quantities of the pulverized salts down beside the roots of the teeth till every exposed part thereof is touched as well as every portion of diseased gum. Make the application to but a few teeth at a time, so as to be able to keep the spreading of the dissolved salts under control. Keep the mouth as free from saliva as convenient. As soon as a few teeth have been treated, inject water freely to carry away the surplus dissolved salts. Then proceed with a few more in the same manner until all are treated. Of course, care should be exercised to protect all other parts of the mouth. Care and skill should enable any operator to avoid touching the salts on the patient, or himself, where they are not needed. The use of paper napkins or pieces of cloth to wipe the patient's mouth will save staining other napkins.

Dr. Bodecker says an effectual way to apply the nitrate of silver is to make a small platinum wire loop, warm it and dip in powdered nitrate of silver and carry into the pockets. He says to keep it from spreading in the mouth, take a glass of salt water, and let the patient rinse the mouth before using the nitrate of silver; then dry thoroughly with paper the place which you want to cau-

terize, and apply the nitrate of silver. If anything flows out, the salt water will immediately coagulate the nitrate of silver, and form an insoluble chloride of silver. Let the patient rinse the mouth with the salt water after the application of the nitrate and no harm will be done to the surrounding tissues.

CARBOLATED CAMPHOR.

Carbolic acid, crystal	49½ parts
Camphor, gum	50½ parts

ELECTRICITY IN TREATING HYPERÆMIA AND CONGESTION OF THE PULP AND PERIDENTAL MEMBRANE.

DR. J. S. MARSHALL.

International Dental Journal, June.

The author in writing on the subject gives a case in his own mouth, which shows the manner of applying the remedy. He says the pulp of the right first superior bicuspid became congested. It was determined to try the depleting effect of the positive galvanic current. The positive pole of the continuous galvanic current was applied to the tooth, and the negative pole to the carotid triangle of the neck on the same sidè. The strength was graduated to his ability to bear it without discomfort, and the poles were allowed to remain in position for about a half hour. At the end of ten minutes there was a marked improvement in the symptoms, and at the end of the half-hour all discomfort in the tooth had disappeared. The marked success which followed the treatment of this tooth led him to adopt the same in several similar cases, all but one of which responded to his entire satisfaction.

In the treatment of pericementitis, not caused by septic poisoning from a devitalized pulp, it is many times of very great benefit. In these cases the positive pole should be applied to the gum over the roots of the affected tooth.

ANTISEPTIC, DISINFECTANT AND ASTRINGENT WASHES.

DR. M. W. SWARTZ.

Dental Review, October.

These are favorites with the author in prescribing for Riggs' disease. The antiseptic and astringent washes may be used alternately.

ANTISEPTIC AND DISINFECTANT.

Acidi Carbolici (Cryst).
Glycerini.
Aqua Rosæ, aa ---------- ʒii.

M. S. Six to eight drops to a wine glass of water morning and evening, or more frequently if necessary.

Or

Acidi Salicylici Partes ---------- i.
Sodi Phosphatis, " ---------- iii.
Aqua Destillati, " ---------- xxx.

M. S. Use as a mouth-wash, morning and evening, or more frequently if necessary.

Or

Acidi Carbolici ---------- gtt. xx.
Glycerini ---------- ʒiv.
Aqua ---------- ℥x.

M. S. Use as a gargle or mouth-wash, three or four times a day.

ASTRINGENT.

Acidi Tannici ---------- gr.x.
Tincturæ Pyrethri ---------- ʒiij.
Aqua Rosæ ---------- ℥vi.

M. S. Use as a gargle or mouth-wash.

Or

Acidi Tannici ---------- ʒss.
Spiriti Vini Rectificati ---------- ʒss.
Aqua Camphorae ---------- f℥v.

M. S. Use as a mouth-wash.

BORO-GLYCERINE MOUTH WASH.

Dental Review, April.

Boro-Glycerine	1 ounce
Carbolic acid	1 drachm
Water	16 ounces

Apply freely, dilute, if necessary.

FOWLER'S MOUTH WASH.

DR. W. H. FOWLER.

Ohio Journal Dental Science, February.

℞	Fl. Ext. Soap Tree Bark	oz. 1½
	Alcohol	oz. ½
	Glycerine	oz. 1½
	Hamamelis, (Pond's extract)	oz. 3
	Oil Wintergreen	m 8
	Oil Cloves	m 5
	Soft water	oz. 8

Dissolve the oils in alcohol and then add to other ingredients.

ANTISEPTIC GARGLE.

DUJARDIN-BEAUMETZ.

Formula No. 1.

Water	1 liter.
Boric acid	25 grams.
Phenic acid	1 gram.
Thymol	25 centigr.

Formula No. 2.

Salicylic acid	1 gram.
Glycerin at 28°	100 grams.
Dist. mint water	100 grams.

Dissolve the warm salicylic acid in glycerine and add the mint water.

MILLER'S ANTISEPTIC MOUTH WASH.

DR. W. D. MILLER.

Dental Practitioner and Advertiser, January.

A formula which Miller recommended some years since, and which has produced good results, is as follows:

℞	Acid Benzoic	3.
	Tinct. Eucalypti	15.
	Alcohol	100.
	Ol. Menth. Pip	0.75

ANTISEPTIC TOOTH WASH.

Popular Medical Monthly.

Phenic acid	gr. xv.
Boric acid	dr. vij.
Thymol	gr. viij.
Essence of peppermint	gtt. xx.
Tincture of anise	dr. iiss.
Water	O ij.
M.	

Rinse the mouth and brush the teeth with an equal portion of this lotion and water, night and morning, or after each meal.

ANTISEPTIC TOOTH SOAP.

Journal, British Dental Association.

Soap albus puriss	60	parts
Tinc. krameriæ	20	"
Calc. carb. precip. opt	22	"
Acid benzoic	3	"
Potass. chlor	5	"
Sodæ bor	5	"
Saccharine	1	"
Ol. cin	.1	"
Ol. menth. pip	.025	"

Perfume with ottar of roses, etc.

ANTISEPTIC MOUTH WASH.

La Medecine Moderne.

℞ Water .... pt. j
Boric acid .... oz. ss
Carbolic acid .... gr. xv
Thymol .... gr. iv

INFLAMED GUMS.

DR. W. S. ELLIOTT.

Items of Interest, September.

Remove all traces of calculus and dress the gum with:

℞ Zinc chloridum .... grs. x.
Acid carbolic .... gtt. xx.
Glycerine ....
Aqua .... aa ℥ss.

Force the remedy well under the free edge of gums once or twice a day till improvement is manifested, then less frequently.

Dr. C. E. Francis says pass a small scaling instrument carefully around and between the affected teeth to free from scales of calculus or other deposits; syringe freely with tepid salt water; inject listerine or iodide of zinc; apply tincture of iodine, and have the patient frequently dust the inflamed margins with powdered borax and tannic acid (mixed). Keep up this treatment for a reasonable length of time.

STYPTIC FOR BLEEDING GUMS.

Pharm. Centralb.

Viau recommends the following styptic for bleeding gums after the extraction of teeth:

Chloroform .... 60 grs.
Tannic acid .... 30 "
Menthol .... 30 "
Tincturæ krameria .... 1 fl. oz.
Distilled water .... 16 "

A DEODORIZER.

DR. G. C. ANTHONY.

Put a half dozen crystals of permanganate of potash in a tumbler full of warm water. It is an efficient gargle for fetid breath and will also diminish the odor from a putrescent pulp, when applied locally; but, in the latter case care must be taken, immediately after using, to syringe the pulp chamber and cavity with warm water; or a brown tooth might be the result.

ABNORMAL GROWTH OF THE GUMS.

DR. C. G. ANTHONY.

This is a morbid condition of the gums we sometimes find between the teeth; bicuspids and molars especially. It is a superfluous growth of the gum between teeth having proximal cavities, or where there is space for its growth. In many cases it entirely fills and hides the cavity, and extending to the masticating surface of the tooth is so constantly a cause of annoyance as to prevent the patient from using that side of the mouth in mastication. In such cases use summary measures. Grasping the offending gum with college pliers, lance off two-thirds of the growth. If the lance is sharp, and used carefully and steadily, the operation will cause no pain. After stopping the hemorrhage, insert one of Dr. Genese's graduated rubber wedges, placing the wide end of the wedge on the gum and forcing the gum back. Allowing this to remain a week, the gum will be normal, and by building out the proximal fillings to make them touch, the patient has no further trouble.

TO DISSOLVE IODOFORM EASILY.

Zahntechnische Reform.

Iodoform is more easily dissolved in alcohol and ether, if there is camphor already dissolved in them. Alcohol dissolves only $1\frac{1}{4}$ per cent. of iodoform; a saturated solution of camphor will take 10 per cent.

ORAL SURGERY.

REPLANTING ELONGATED TEETH.

DR. T. W. PRICHETT.

Dental Review, March.

The case was a lower central incisor—elongated one-eighth of an inch, and so loose the tongue would move it forward and back through a distance of half an inch. The sockets of all the incisors were shortened to half their normal height.

Treatment—extracted tooth. Drilled through crown to pulp-chamber. Removed pulp, using freely of bichloride of mercury solution in pulp chamber and root canal. Filled root with chloro-percha and gutta-percha cone—crown with amalgam. While preparing the socket, kept the tooth immersed in an eight per cent. solution of carbolic acid—100° F. temperature.

Deepened socket until tooth was even with adjoining teeth, sterilizing with peroxide of hydrogen and bichloride of mercury alternately. Inserted tooth—binding tooth in place with ordinary iron binding wire, looped around the adjacent tooth—cross tieing through the interdental spaces. The tooth to-day is rigid in its position, and is, and has been, as useful as any of its fellows. Subject is sixty-five years old.

Case reported after standing four years.

EXTRACTING AND REPLANTING IN OBSTINATE ALVEOLAR ABSCESS.

DR. J. S. MARSHALL.

Dental Practitioner and Advertiser, July.

Dr. Marshall has practiced this for a number of years with good success. Teeth that are not amenable to treatment are thus saved and made useful.

The following points would seem essential to success: Exclude anæmic, tubercular and syphilitic cases. Secure thorough aseptic conditions. Remove eroded surfaces and all depositions. Hermetically seal the pulp canal. Curette the abscess cavity and wash it with an antiseptic solution. Secure entire immobility of the replanted tooth until union has taken place.

The after treatment consists in frequent irrigation of the mouth with antiseptic solutions, among the best of which are Thiersch solution, composed of

Boric acid	12 parts
Salicylic acid	4 parts
Water	1,000 parts

And one consisting of

Listerine	1 part
Water	3 parts

Bichloride of mercury preparations are not permissible, because of danger from poisoning, and the liability to blacken the teeth.

TO ENTER THE ANTRUM.

DR. J. S. MARSHALL.

Dental Cosmos, August.

The best point to enter the antrum is between the roots of the second and third molars, as that is the most dependent portion. As a wash the author uses

Boracic acid	12 parts
Salicylic acid	4 parts
Water	1000 parts

GUTTA-PERCHA SPLINT.

DR. W. C. BARRETT.

Dental Practitioner and Advertiser, July.

A case was presented to me of a boy about twelve years of age, over whose head the wheel of a very heavily loaded wagon had passed, fracturing the lower jaw in a number of places. A surgeon wired the pieces together by wires around the teeth. But when the

boy attempted to close his mouth, the jaw went away around to one side, the symphisis being nearly an inch deflected.

Reasoning by exclusion, as I found no crepitation and no fixation, I came to the conclusion that there was no luxation, and no complete fractures that were not securely wired. That left but one cause for the condition—an incomplete, or green-stick fracture, across the angle of the ramus. With the muscles relaxed the jaw fell directly down, but when he attempted to close his mouth, the temporal, and internal pterygoid, with some of the fibres of the masseter, not being counteracted on the other side, drew the jaw to one side, it bending or yielding at the point of the incomplete fracture.

Gutta-percha impressions were taken of both jaws. These were trimmed to the proper shape, and a notch cut in front for feeding purposes. The boy was then again anæsthetized, the occluding surfaces of the gutta-percha impressions that were to serve as splints warmed until they were adhesive, and then by main force the jaw was carried to its proper place and the two gutta-percha splints stuck together, when the whole was fastened with a two-tailed bandage. The results were all that could be desired.

FRACTURE OF LOWER JAW.

DR. D. S. ARNOLD.

Dental Cosmos, November.

An employe of the United States Rolling Stock Company met with a serious fracture of the lower maxilla by a large piece of timber being caught in the machinery and forcibly striking him upon the chin, knocking the anterior part of the alveolar process, containing the six anterior teeth, back in the posterior part of the mouth, and fracturing the body of the inferior maxilla in several places. There were two incised wounds upon the chin, being cut by the sharp edges of the timber. I took the piece of alveolar border containing the six anterior teeth and carefully placed in it its natural position, and secured it by passing silver wire around the right bicuspids and then interlacing each of the displaced teeth, and securing them in position by uniting the ends of the silver

wire around the bicuspids on the left. Then drilled holes through the fractured body of the bone. Passed wires through the drilled holes of the fractured parts. When these wires were made fast and tied, there was no crepitation whatsoever, the bone being perfectly solid and strong. Stitched up the wounds upon the chin, and the operation was complete. In one week after the operation the patient had partial use of his jaw, and in three weeks could masticate ordinary food. Now he has complete use of his jaw, and sensation is present in each of the teeth that were entirely displaced by the blow.

TREATING THE ANTRUM.

DR. G. L. MORGENTHAU.

Dental Review, April.

On opening the cavity, it is flushed with some warm solution of an antiseptic. Not a few ounces are injected; but the medicated fluid is introduced through the artificial perforation, and allowed to escape through the natural opening till the cavity is well cleansed, i. e., till the water runs clear and pure from the nose. Then the remaining fluid is driven out and the cavity dried by blowing air through the cavity. A Davidson syringe is very handy for producing a continuous stream, the force of which can be regulated with nicety, and for supplying the current of air. After the lining of the sinus is thus carefully prepared, powder can be applied to it directly. Iodoform is the most reliable. But if the patient objects to the odor, or fear of intoxication renders caution necessary, it can be replaced by iodole, aristole, boric acid, pyoktanin, or sulphonal.

PERMANENT CLOSURE OF THE JAWS, OPERATION.

DR. WM. KNIGHT.

Dental Register, April.

Barbary Engel, aged eighteen, called at the consulting rooms, having been sent by Dr. H. A. Smith. An examination showed a pitiful condition of the mouth. There was no movement what-

ever in the lower jaw. The gums were swollen, red, soft, and bled upon the slightest touch; some of the incisors had been extracted but the remaining teeth, part of which were in a decayed condition, were firmly locked, and crowded one another from their normal position. From this miserable condition, she pleaded earnestly to be relieved. She had a clear, healthy complexion, a good deve-lopment of head, bright, intelligent looking blue eyes. These characteristics give expression to a face, that owing to a marked recession of the chin, attending upon arrested development of the lower jaw, would otherwise have the stamp of idiocy.

At the age of three years she had a fall upon the chin, which was succeeded by swelling about the face and gradual tightening of the jaw, until complete closure ensued. From this time the jaw has remained immovable. Her nourishment necessarily consisted entirely of liquids.

Within the last fourteen years several attempts by different surgeons were made, under chloroform, to force open the mouth but without success; still, I thought something more should be attempted to relieve her sufferings. The various operations by which this condition may be remedied were carefully considered, and the one selected was, if possible, to form artificial joints above the angles on both sides of the lower jaw. The danger attending this and the uncertainty of success were explained to the patient as well as to her friends. The only promise given, being that in case of failing to liberate the jaw, we would extract the teeth.

An operation on the right side of the lower jaw was made. The incision passed below the ear along the posterior border of the ramus to near the angle of the maxilla; the anterior surface, as well as the border of the ramus were then cleared of soft parts and the periosteum by the handle of the scalpel, sufficiently to readily admit into the wound a small movable back saw; the bone was then carefully sawn through, the direction being obliquely upward from about a quarter of an inch above the angle. The attempt to remove a wedged-shaped piece of bone from the upper fragment with the saw, was not entirely successful, but with the aid of the bone cutting forceps and also the chisel and mallet, it was removed in small pieces. The hemorrhage throughout the operation was slight. The dental artery, by forcing and holding for a few seconds a small plug of soft wood into its canal, ceased

bleeding. The soft parts were brought together and the wound dressed with iodoform. After the patient had been removed to her room, she did well; during the first forty-eight hours there was a slight rise of temperature and for a few days a little swelling of the neck as well as a difficulty in swallowing, but there was no movement of the jaw gained by this operation. The difficulty in swallowing was most likely due to the injury done to some of the fibres of the superior constrictor, as the attachment of this muscle to the jaw was involved in the portion of bone removed. The patient left the hospital on the eighth day after the operation.

Two weeks later the patient was again admitted to the hospital. An operation upon the left side of the jaw was then made, which was similar to the previous one, and so liberated the jaw as to enable Dr. Mollyneaux to extract several badly decayed teeth that had caused the patient much suffering. From this operation, the symptoms were more pronounced; not only was the temperature higher, but the swelling of the neck and the difficulty in swallowing were more severe; but these symptoms subsided after the third day. On the second day after the operation she was asked to protrude her tongue. To her surprise and great joy she found that she was able to do so. This organ, however, was very small, being apparently arrested in its development from want of use; similarly as the inferior maxilla had been. Not an uninteresting feature in this case was the rapidity of growth which took place in her tongue, for within a week after she had first protruded this organ, it had gained double its size.

On the fourth day, Dr. Mollyneaux, assisted by Dr. G. C. Minturn, succeeded in obtaining, under chloroform inhalation, an impression of the interior of the mouth. The molar teeth were lying horizontally with the crowns facing the tongue, but with the use of mouth washes, first containing permanganate of potash, and later one more astringent containing tincture of hydrastis with chlorate of potash, her mouth was relieved of its foul condition and became clean and sweet. The gums and oral mucous membrane assumed a firm and healthy appearance. From the impression made of her mouth, silver shields were applied which have assisted in maintaining the movement which has been gained. Her speech, which before the operation was muffled, became clear and distinct. Her condition was thus decidedly improved, although

but slight movement of the jaw had been gained. She left the hospital on the eighth day quite well, with the exception of a little pus oozing from the wound on either side.

For some time subsequently, the patient was daily under my observation. Within a week of leaving the hospital, she was able to chew bread and eggs, and for the first time since she was three years old, she was able to eat meat; a quail contributing to her meal.

The movement in her jaw is an up and down movement only, no lateral movement whatever being present. It is evident that in this case a double synarthrodial joint has been established. It would have been more satisfactory to have secured a double arthrodial joint.

There is not more than an eighth of an inch movement in the molar region, but this to the patient is valuable. The scars upon the face are not very noticeable and will become less so in time.

EXSECTION OF THE INFERIOR DENTAL NERVE.

DR. T. W. BROPHY.

Dental Review, July.

The author says he has never found it necessary to make an external incision in performing this operation, and sees no reason why external incisions should be made. Any mouth which will admit of access to the second molar tooth for the insertion of a filling will allow abundant room for the performance of the operation in question.

In performing neurectomy upon the inferior dental nerve the operator should remove all that portion of the nerve situated in the inferior dental canal.

This may be accomplished in two ways: 1st, by separating the nerve from its branches at the mental foramen and then by the use of a tenaculum take up the nerve as it enters the inferior dental foramen (at this point it is only submucous) and draw it from its canal, after which it may be excised. 2d. The operation which I

prefer is to expose the mental foramen and by the use of a flame shaped bur cut away the buccal wall of the canal, thus exposing the nerve nearly as far back as the ramus of the jaw; the nerve may then be drawn forward far enough to enable the operator to excise it and remove all that portion which lies within the canal.

To prevent its reproduction he has, after removing it, made use of a bur and thoroughly removed the inner walls of the canal, which procedure happily terminated in the formation of an exudate, which in turn ossifies and permanently closes the inferior dental canal and thereby renders the reproduction of the nerve impossible.

TO TAKE PLASTER IMPRESSION OF FRACTURED JAW.

International Dental Journal, December.

Dr. Bishop says: If you have the right cup and oil it, and let the plaster stay until it gets thoroughly hard, you can remove the cup, and the plaster is still in place. Use a lance-knife and cut through the plaster to the tooth, then down the side of a canine or bicuspid, then with a chisel it is easily broken and removed in sections; when placed back into the cup you have a perfect impression. The trouble is, it fits too nicely. In vulcanizing the splint, use tin-foil over the cast, thus producing greater freedom in getting it into place.

DIAGNOSIS AND TREATMENT OF FRACTURES OF THE MAXILLÆ.

DR. WM. CARR.

International Dental Journal, December.

There is but little difficulty in establishing the correct diagnosis of fracture of the maxillæ, as the following symptoms are usually present: Severe pains in the effort to open or close the mouth, swelling, crepitus, inflammation, inability to masticate, and marked irregularity of the teeth, with more or less displacement.

Fractures of the maxillæ are caused either by accident or by

direct violence; usually by accident when the superior, or both superior and inferior are involved, and by violence when the inferior only is fractured. A noticeable circumstance in connection with these fractures is that the patient rarely applies for treatment for several days succeeding the injury, which, if resulting from violence, is usually inflicted while fighting, when from intoxication or other causes he is not cognizant of the nature of his injuries. He is aware that some of his teeth are loosened, as also that his face and mouth are badly bruised and correspondingly painful, but he does not apply for surgical aid until alarmed by the increased inflammatory condition of the parts.

Fractures of the inferior maxilla may occur at any part of the bone; they are rarely found at the symphysis menti or at the coronoid process. Occasionally the ramus and angle are fractured. Should the condyle be fractured it will usually take place at its neck, resulting from a fall upon the chin or from a blow received at or near the angle. Most frequently fractures occur in the body of the bone in the region of the mental foramen.

Although there may be considerable displacement in fractures of the superior maxilla, yet, if properly treated, serious complications seldom arise, owing to the great vascularity of the parts.

The treatment is identical with that for other fractures,—namely, to bring the parts into apposition and retain them firmly until ossification is complete. When the splint is properly adjusted, speedy union may be secured without deformity of the jaw or irregularity of the teeth. Before taking an impression a careful examination of the parts should be made by passing the finger along the margin of the jaw, to ascertain whether any foreign substance or loose pieces of bone are present. No effort should be made to reduce the fracture before taking an impression, as this is practically useless and inflicts unnecessary pain. Should there be loose or fractured teeth or diseased roots, they should be removed immediately, as their retention might possibly interfere with union. Also, all exposed pulps should be devitalized, as they might cause considerable suffering during treatment.

When the inferior maxilla only is fractured, an impression of the upper jaw should first be taken in order to secure the confidence of the patient; then take an impression of the lower jaw,

using an ordinary lower impression-cup, avoiding the use of too much compound, as only an impression of the teeth is required. For this purpose use S. S. White's or Hood and Reynold's No. 2 Impression Compound as warm as the patient can bear it, in order to prevent unnecessary pain; also, to prevent further displacement of the parts, allow the compound to remain until hard; this will insure a sharp impression.

In making models, mix sulphate of soda or salt with the plaster to give solidity, saw the cast at the point of fracture, and articulate with the cast of the upper jaw; unite them with a few drops of melted wax and immerse the cast of the lower jaw in water, keeping it immersed until thoroughly saturated; then reunite the two parts previously sawed by filling the space with thin plaster. When this has hardened, secure both casts in an articulator. Before waxing, trim the necks of the molars and bicuspids of both casts. This trimming is necessary to secure a tightly-fitting splint, as an impression rarely takes the undercuts of the teeth. Separate the casts by means of the screw at the back of the articulator, leaving a space of about four lines between the incisors. This will leave sufficient room for the patient to receive nourishment. Place a strip of ordinary sheet wax over the teeth of the lower cast, extending it to the free margin of the gum. Also wax in the same manner the teeth of the upper cast as far forward as the canines; next place a roll of soft wax on the grinding surface of the molars and bicuspids, and bring the articulator firmly together; remove the excess of wax, and smooth; then remove the articulator and proceed to invest as far as in an ordinary vulcanite case taking extra precaution to thoroughly saturate the casts with water to prevent the formation of bubbles while flasking. After removing the wax, paint the teeth with collodion or liquid silex and cover with tin foil; then pack, having the rubber as soft as possible. Vulcanize for two hours at a temperature ranging from 280° to 300°, in order to secure an elastic splint. Before adjustment, deepen the depression for the molars about one line; drill a small hole on the buccal surface of the splint over the grinding surface of each molar, for the purpose of ascertaining whether, after adjustment, the teeth are in proper position; adjust the splint to the upper jaw, and gently bring the lower jaw with the fractured portion or portions into position until it has passed about two-thirds the length

of the teeth. Then with a quick, firm movement bring the parts into place; this movement will, necessarily, be very painful for the patient. After adjustment, pass the finger along the body of the lower jaw, to ascertain whether reduction is complete. Next apply the four-tailed or the straight bandage, which should be retained from three to five days, after which, in most cases, it may with safety be removed during the day, but it should be replaced at night until the splint is removed.

The patient should be instructed to keep the mouth thoroughly cleansed, rinsing it morning and evening, first with tepid water, afterwards with equal parts of tepid water and peroxide of hydrogen; at intervals during the day listerine mixed with tepid water, in the proportion of one to three, should be used for the same purpose.

In ordinary cases the splint should be retained three or four weeks, according to the age and physical condition of the patient.

Unless unforseen complications should arise, the application of the splint, combined with thorough cleanliness, will usually be all the treatment required.

REPLANTING, TRANSPLANTING AND IMPLANTING TEETH.

DR. THEO. F. CHUPEIN.

Dental Office and Laboratory, September

This operation consists in replacing into the same socket the tooth which had been accidentally knocked out or become loosened by accident, or which was removed with the view of cure of an alveolar abscess.

In the former case the tooth is placed into a cup or vessel of tepid water and perfectly cleansed of all dirt or particles which may be adhering to it. The socket should be cleansed of its adherent clot of blood by means of a probe wound around with cotton. As soon as this is done the socket should be packed with a tent of cotton, which is permitted to remain in place until the tooth is ready to be inserted.

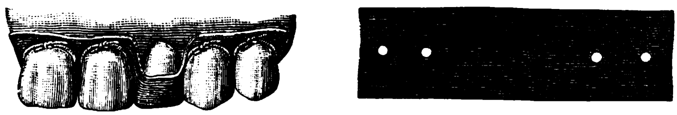
When the tooth is ready to be inserted in its socket, a small

dental syringe is charged with tepid water, the tent of cotton is removed from the socket, and the contents of the syringe squirted into the socket, and the tooth immediately inserted. While an assistant holds the tooth in place, a piece of waxed ligature silk is passed in and out in the form of the figure 8, as shown by Fig. 1, and the tooth thus ligated in place to the adjoining teeth.

FIG 1.

Sometimes there is a disposition on the part of a tooth, thus inserted, to droop or be slightly lower than its neighhors. To overcome this it has been proposed to cut a small piece of rubber dam, as shown in Fig. 2, and to place this over two neighboring teeth on either side of the one inseited, and to ligate this to the

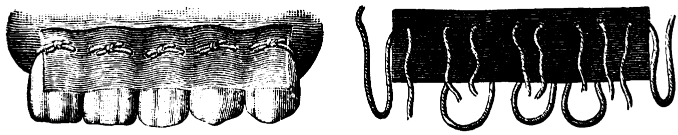
FIG. 2.



adjoining teeth, so that the elasticity of the rubber will keep the inserted tooth in its proper alignment and position.

In the case where a tooth has been considerably loosened, but not entirely knocked out, a splint may be made of a piece of base plate gutta-percha; holes may be made through this with a sharp

FIG. 3.



straight-pointed heated instrument. Ligature silk is passed through as shown by Fig. 3, when it is applied as shown in the cut, and left in place until the tooth becomes firmly fixed in its socket.

Should there be a disposition to inflammation after such accidents, the gums may be painted with a camel hair pencil, with a solution of equal parts of glycerine, tinct. iodine and tinct. aconite,

but where there is considerable swelling of the gum from a great congestion of blood to the parts, leeches should be applied.

In the case where a tooth is replanted for the cure of alveolar abscess, the procedure is as follows: The tooth must be carefully extracted. Ordinarily this is not difficult since teeth thus affected are found to be considerably loosened. To avoid breaking the enamel, in any of the six upper front teeth, the beaks of the forceps may be padded by two or three thicknesses of muslin. This will permit a sufficient grip of the forceps, and lessen the chances of fracture of the enamel at the cervix, where it is quite thin.

When the tooth is removed it is placed in a saucer of tepid water. A few drops of the tincture of iodine may be added to the water. The socket is then wiped out with a probe on which cotton is wrapped. The "cul de sacque" at the bottom of the socket, where the pus bag at the end of the root lies, should be entered with an oval or round cavity bur, or spear pointed drill, in the dental engine, and the remains of cyst broken up. The debris is then washed out by repeated syringing with tepid watei, and the socket packed tightly with cotton steeped in the tincture of iodine.

The tooth is then cleansed of all traces of the abcess, and the end where the sac adhered to the peridental membrane is amputated. All adherent particles of tartar are also removed. In doing this the tooth should be held between the fingers with a small napkin interposed. The root canal is then cleansed, and the nerve chamber and root filled from the root opening. The amputated root as well as the filling are nicely smoothed and burnished, and the tooth again placed in the saucer of tepid water. The cotton tent is then removed from the socket. It is again syringed with tepid water, and the tooth immediately replaced with firm pressure. The tooth may be held in its position for a short time when it is ligated as shown by Fig. 1, or should it droop, by the plan advised and illustrated by Fig. 2. The patient should be directed to use an astringent mouth wash of which the following from Dr. Gorgas's Dental Medicine will serve:

Carbolic acid (cryst)
Glycerine and rice water, aa --2 drachms.
Mix.

Use five to eight drops in a wine glass of water.

TRANSPLANTATION.

This operation consists of inserting a foreign tooth, or the tooth of another person into the socket of one that has been extracted. The operation is attended with a certain amount of risk and difficulty, since disease may be transmitted by it. And again it is difficult to obtain the tooth that is to be supplied, of the same shape, size and shade, as the one extracted, or where the root is of the proper length or bulk, neither too large nor too small, too long or too short. If the root be smaller than the socket it would answer, but if too large it would not do to reduce it by filing to make it fit, for by so doing the peridental membrane would be destroyed. If the root be a trifle too short, this would be no impediment, and if it be too long it would be no harm to amputate the end of the root.

When all these considerations are satisfied the operation may be performed, and is accomplished in the manner already set forth for the operation of replantation.

The curvature of the crown, the width, length, character, and many other points have to be thought of in the selection of a tooth for transplantation.

IMPLANTATION.

The operation of implantation consists of drilling or forming a socket or cavity in the bone where no socket exists, and implanting therein a tooth recently extracted, or one which had been extracted for a length of time before. Like transplantation it is attended with risk from the transmission of disease.

It consists of drilling an artificial socket in the bone with the view of inserting therein a tooth which has been lost.

The gum and periosteum are first removed by means of a cylindrical knife in the dental engine. This while being violently rotated is pressed on the gum down to the bone in the locality where the tooth is to be implanted. This removes these tissues so quickly that it may be said to be almost painless. The socket is then drilled with instruments called "spiral knives," to which collars are attached to indicate the depth to which the drilling is to be carried, but the same may be accomplished witb a spear shaped drill, although the spiral knives, being formed somewhat to the shape of the root leaves the socket very nearly of such shape as is

needed. With conical reamers used with a swaying motion, the shape of the socket can be pretty nearly made of the proper form. The spiral knives cut the bone with great rapidity, and without pain. All the instruments used are kept in a bath of a solution of bichloride of mercury of a strength of two parts of the drug to one thousand parts of water, and at a temperature of 110° F. for a quarter of an hour at least before using them. The tooth also is kept in the same solution. The end of the root is slightly amputated and the pulp removed, and the root and nerve chamber cleansed and filled. It is then re-immersed before insertion, and when all is ready it is inserted. The tooth may be tried in the socket which has been drilled for it, to see if the size, depth and alignment are correct, when it is inserted, and ligated to the adjoining tooth until perfect adhesion takes place.

The utmost cleanliness must be observed in sterilizing all the instruments, and the hands should be washed and the nails scrupulously cleansed and disinfected, with proper antiseptic washes, before commencing the operation.

SPLINT FOR LOWER JAW.

DR. M. H. FLITCHER.

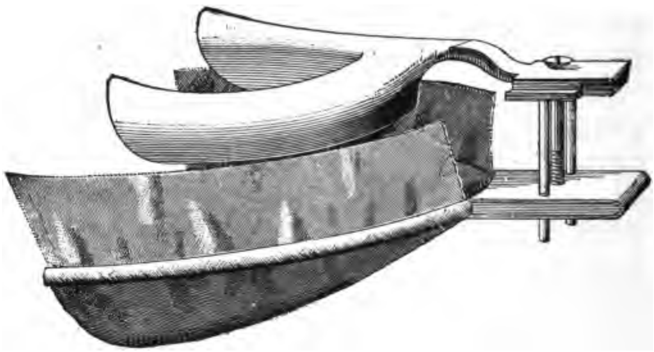
Dental Cosmos, December.

The splint is made by using a lower impression cup, the handle of which is made thicker by soldering to it a piece of block tin, or if more convenient, use a piece of handle of an old cup. Into this handle two guide pins are fastened, as shown in Fig. 1. Between the pins a hole is made to admit a stove or carriage screw. For the support under the jaw, a stiff wire is bent to the curve of the jaw, and soldered to a handle, as shown in Fig. 1. Two holes are made in the handle for the guide pins to pass through, also a hole for the screws, the threads of which will cut its way into the handle. Heavy canvas is stretched across the wire fork, to which it is strongly stitched; the ends of which are allowed to extend above the wire, to which is to be attached a four tail bandage, as shown in Fig. 2, which represents the splint in position.

To apply the splint, adjust the fractured jaw, fill the impres-

sion cup with quick-setting plaster, or softened gutta-percha and press it down, as if taking an impression. (It may be necessary sometimes, to take an impression and make a model, which is cut

FIG. 1.



apart at the fractured points and reunited in perfect alignment and articulation, and from this reconstructed model take the impression that is to be used in the mouth to hold in proper position the

FIG. 2.

teeth or jaw.) After placing the cup properly in the mouth, adjust the under piece, allowing the guide pins to pass through the holes; insert the screw, screw the parts together and apply the bandage.

Dr. John S. Marshall, in speaking on the subject, said he thought the better way to treat fractures of the inferior maxilla, was to wire the parts firmly together with a silver wire, as the mouth is so much easier to keep clean than when a splint is worn. In such cases he dissects down the tissues till the edges of the bone are reached, the tissues and the periosteum being laid back. A drill is then passed through near the end of the bone, care being taken to avoid the roots of the teeth and the inferior dental canal. A silver wire is then passed through the holes in the ends of the bone, and the parts brought together. Two or more such sutures are made, and secured until the fractured parts are immovable. He has treated many such cases in this way without any bandages. No after treatment is required except frequent washings with an antiseptic mouth-wash, for which he prefers Thiersch's solution, as follows:

Boracic acid	12 parts
Salicylic acid	4 parts
Water	1000 parts

This is a good antiseptic: is not dangerous, nor unpleasant to the taste, only a little bitter.

16

MISCELLANEOUS.

HAND LOTION.

DR. JOHN G. HARLEN.

Dental Review, March.

℞	Bay Rum.
	Glycerine.
	Ex. Witch Hazel.
M	Aqua Rosa a a ℥ j

Thoroughly wash and dry the hands, then apply. The best time, just before retiring for the night.

COLD SOLDERING.

National Druggist.

This process is especially recommended for surgical and philosophical instruments. The flux consists of one part of sodium to fifty parts of mercury. This must be carefully protected from the atmosphere in glass stoppered bottles. This flux will amalgamate any metal.

To use, put the flux on the surfaces to be joined and use the amalgam as described below:

Silver	8 parts
Tin	10 parts
Bismuth	1 part
Platinum	1 part

Melt together, and cast an ingot. Rasp to filings, or otherwise reduce to small particles. When required for use, mix about 3 parts of filings and 1 of mercury in a small mortar till it becomes a smooth paste. This sets in about fifteen minutes, and cannot be made workable again by heat; it must be mixed just as required. The omission of the platinum reduces the strength of the solder, and lengthens the time required to harden to about one hour. The

omission of bismuth makes a more granular mass, which is better for filling up crevices. With bismuth, it is as smooth and plastic as potter's clay. Joints made by this solder are almost inseparable. It is very valuable in repairing surgical and philosophical instruments, the brazing of delicate springs, and in all cases where the application of heat would be hurtful or destructive.

MOUTH ANNEALING LAMP.

DR. N. H. KEYSER.

Items of Interest, May.

Take a small homeopathic vial, fit in a cork with a small groove, use as a wick cotton twine; fill the vial nearly full of the wick allowing it to protrude a short distance through the groove in the cork; use very little alcohol, only sufficient to thoroughly saturate the wick. Use a napkin in the mouth to protect the flame from the breath.

CAMPHORIC ACID IN ACUTE CORYZA.

St. Louis Clinique.

A cotton wool tampon charged with a 2 per cent. solution of camphoric acid and introduced into the nostril, gives rapid and permanent relief in acute coryza.

ALUMINUM, MELTING, CASTING, ALLOYING, SOLDERING AND POLISHING.

DR. GEO. W. HASKINS.

Dental Review, May.

The melting, casting, rolling, drawing and soldering of aluminum is different from all other metals in common use, and must be understood in order to make these operations successful.

It is best melted in the sand crucible. This crucible should have been filled with a mixture of lamp-black and molasses, allowed to dry slowly, after which a hole is excavated in the center, or the

crucible may be merely smeared on the inside with this paste. It is possible, by using great care, to melt it in the naked sand crucible, but the danger is that with much heat the aluminum will take up silicon from the crucible. As to the manner of heating, it should have a slow fire and patience, as it is very slow to melt. Use no flux, as the metal will not oxidize. In melting the scraps be sure they are free from foreign metals, and if they do not unite well when melted they may be pressed together with a smooth, clean iron bar. It is advised by some that the pieces to be melted be dipped in benzine before melting, others add benzine to it when they are melted.

When melted, aluminum is viscid or thick, and does not run freely. For this reason and from its light specific gravity it is somewhat difficult to cast. To avoid these difficulties, if cast in a sand mold, the sand should be left as loose as is consistent with making the mold, to permit egress of air, and the gate should be large and long, furnishing sufficient head or weight of metal to force the melted metal beneath into the finest portions of the mold. Dr. C. C. Carroll's method of furnishing artificial pressure by means of air answers admirably.

In hardening and annealing, aluminum is peculiar. It is best softened by heating to low red then suddenly cooling, and by heating to redness and cooling very slowly and gradually it becomes decidedly hard and springy. In rolling, hammering or drawing it very quickly becomes hard and elastic, and requires frequent annealings with sudden coolings. These operations all require a much greater expenditure of force to accomplish the same results than they do in other metals. The power needed to roll cold aluminum has been compared to that required to roll hot steel.

When first brought to general notice one of the greatest drawbacks to its use, was the great difficulty experienced in soldering it. This has to some extent been overcome, but it is still difficult and somewhat unsatisfactory. Two solders are recommended for dental work; the formulas are for the platinum aluminum solder, gold 30, platinum 1, silver 20, aluminum 100; and for the gold aluminum solder, gold 50, silver 10, copper 10, aluminum 20.

Mourey experimented a great deal with aluminum solder and I quote direct from him, directions for soldering: "The separate pieces of metal to be soldered together are first well cleaned, then

made somewhat rough with a file at the place of juncture, and the appropriate solder put on in pieces about the size of millet grains; the objects are laid on some hot charcoal, and melting of the solder effected by a blast lamp, or a Rochemont turpentine lamp; during the melting of the solder it is rubbed with a little soldering tool of pure aluminum; the soldering tool of pure aluminum is essentially a necessity for the success of the operation, since a tool of any other metal will alloy with the metals composing the solder while the melted solder does not stick to that made of aluminum.

Fluxes for soldering are recommended by some, some of which are balsam copaiba, benzine, paraffin, stearin and vaselin. As in other respects aluminum is peculiar, so it is in regards polishing. Like silver it takes the best finish by burnishing, but the fluids which are so effective in burnishing silver would ruin aluminum; a mixture of equal parts of olive oil and rum is recommended for the burnishing, after which it is buffed.

Some of the alloys of aluminum promise to be of great interest, but the useful one seems to fall into one of two sets; these are those combinations in which aluminum forms 15 per cent. or less, or 85 per cent. or more of the compound; those in between these are for the most part useless.

Alloys of silver and aluminum containing about 10 per cent. of silver make very useful articles of table ware, as they are not at all easily tarnished, and present fully as pleasing an appearance as does the silver alloyed with copper. Dr. Carroll's metal for cast aluminum plates, according to the description in his patent papers, consist of copper 1, silver 5 to 9, and aluminum 90 to 94, the addition of the small amount of copper it is claimed does away almost entirely with the shrinkage.

Compounds of copper and aluminum are more generally known than any others, and of them all, that which contains 90 per cent. of copper and 10 per cent. of aluminum is the most useful; when the percentage of aluminum increases, the alloy becomes very brittle; this is true up to the point where the aluminum forms 90 per cent. of the mass, when the alloy again regains its malleability, but not to as great an extent as in the first named. The different alloys of aluminum and copper are called aluminum bronzes, and are designated as 5 per cent. or 10 per cent. bronzes according to the amount of aluminum present.

FORGING AND TESTING TEMPER OF STEEL.

D. W. M. STEELE.

Items of Interest, May.

Many times a tool, after being shaped, and made perfectly straight, will spring or warp out of shape in tempering. This is generally caused by improper hammering. During the process of drawing out and shaping a piece of steel, the hammer should be used equally on all sides, to retain the same density.

We often waste much valuable time shaping some tool or instrument only to find, when finished, that the steel used will not take a hard temper. It is much better to test the steel for temper before working, which may easily be done. Take a piece of the steel and draw it to a square tapering point, at a low heat, and plunge it into cold water; then with a pair of pliers break off the extreme point, and if the remaining sharp corners will make a scratch on glass, the steel is susceptible of a high temper.

TO PRESERVE SOFT GOLD.

Dental Review, May.

Dr. Black says a bottle of carbonate of ammonia placed in the drawer with soft gold will preserve its soft qualities, also that cohesive gold will become non-cohesive, if treated similarly.

TONGUE AND CHEEK HOLDER.

Dental Review, May.

Dr. Wedelstaedt says the celluloid spoon sold with Heinz's mustard, makes an excellent tongue and cheek holder for many little operations about the mouth.

TO REMOVE PERMANGANATE POTASH STAINS.

Dental Review, April.

Use a dilute solution of oxalic acid and hypo-sulphite of soda.

MOUTH FLASH LAMP.

DR. D. V. BEACOCK.

Dominion Dental Journal, March.

Get a small curved drop-tube or pippet at the druggists, put in a wick, fill with alcohol, by removing the rubber bulb. Light with a match and you have a very handy little flash lamp, useful for setting crowns, repairing old gold fillings, removing crowns that have been set with gutta-percha.

TO SHARPEN FILES AND BURS.

Items of Interest, March.

Boil them first in soda water, and clean out of the grooves any debris that still remains; wash off the soda-water, and keep them in sulphuric acid, diluted with half water, for two or three hours. Some instruments will need a longer time; experience will soon show how long. When sharpened, rinse thoroughly in soda-water, wipe dry and oil them slightly.

TO KEEP RUBBER DAM.

Items of Interest, January.

Dr. R. R. Rykert says he succeeds well by placing the dam in a jar of water closed air-tight, placing it in a cool, dark place, changing the water after ten days and washing the dam. This is done only once.

A RUBBER HEATER FOR PACKING.

DR. W. W. DAVISON.

Items of Interest, June.

A good rubber heater is easily constructed by taking a shallow round tin pan and soldering a cover on it, leaving a water space of less than an inch, through this top make a round hole to which a short tin tube is soldered for the escape of steam.

COMPRESSED AIR CYLINDER.

DR. DARBY.

International Dental Journal, April.

A cylinder, made of galvanized iron, holding one hundred gallons, with a pipe running to the office, and at its end a gauge to denote the number of pounds pressure. A stop-cock within reach of the chair and a rubber tubing reaching to the mouth of the patient, with a Taft hot-air syringe, and a little spring cut off, to be held in the hand. In the laboratory, in close proximity to the cylinder, is an air-pump Each morning pump into this cylinder compressed air, anywhere from five to thirty pounds. By simply holding the bulb of the Taft hot-air syringe in the flame of a small Bunsen burner, any degree of heat desired, with sufficient pressure back of it to force it into the root of the tooth, can be had.

TO MAKE WAX SHEETS.

DR. D. V. BEACOCK.

Dominion Dental Journal, January.

After the wax is properly cleaned, get four pieces of glass cut the width you want the sheets, and about ten inches long. Any deep vessel, such as a dinner pail, or an old oyster can will serve to melt the wax. Put the pieces of glass in a pail of cold water, when the wax is melted, take two pieces of the glass, one in each hand, and dip alternately, one cooling while you dip the other; about three or four dips is sufficient, then drop into the cold water. Let these two remain till you dip the other two in the same manner. By trimming the edges oft the glass with a knife the sheets will drop off themselves. If the wax is kept too hot the sheets will be too thin, if too cold they will be lumpy and thick; near the setting or cooling point is the proper temperature. A tablespoonful of Venice turpentine to three or four pounds of wax will toughen it. This should be evaporated to dryness like resin. It can sometimes be obtained in drug stores in this form. It will answer the purpose even if used thin, but the thicker it is the tougher will be the wax sheets.

If you wish extra fine wax you can bleach it and cleanse it

at one operation. Melt the wax and add two ounces of nitrate of soda, and one ounce of sulphuric acid diluted with one gill of water. This should be added slowly, at the same time stirring with a pipe-stem or glass rod. It is then cooled and set aside after filling the vessel with hot or boiling water. Wash the wax well with boiling water and the whole process is completed.

Be careful how you add sulphuric acid to hot liquids.—Ed. Compendium.

NICKEL-PLATING WITHOUT A BATTERY.

The Keystone.

To a dilute (five to ten per cent.) solution of chloride of zinc add enough nickel sulphate to give the solution a deep green color. Heat the solution in a porcelain vessel to the boiling-point, and immerse the articles to be plated so they will not touch each other, and boil from thirty to sixty minutes, adding water to compensate for evaporation. The articles are taken from the solution and thrown into water which has some fine chalk stirred up in it. Articles so coated have a bright nickel surface, which can be brushed with chalk, but will endure but little handling.

LABORATORY CLEANSING.

DR. GARRETT NEWKIRK.

Dominion Dental Journal, January.

Put a package of Pyle's Pearline in a tin can—a baking powder can is good—open and ready for use. It is excellent for all cleansing purposes, and especially for flasks; and (mixed with a little soap and warm water) for cleaning the hands on short notice. For office use, Colgate's Glycerine is the best. Chloroform on a bit of cloth will remove wax; or gasoline, barring the odor, is just as good. Also a little aqua ammonia added to warm water makes a great improvement in its dirt-removing power. Bathe the hands freely in glycerine before engaging in any plaster or rubber work, they will be so far protected as to be readily cleansed afterwards.

CLARIFYING WAX.

DR. C. W. BERRY.

Items of Interest June.

Collect in a basin all of the old wax, and add a pint of water containing half an ounce of oxalic acid crystals. Boil slowly for half an hour and set aside to cool, giving it plenty of time. Scrape off the refuse wax underneath the cake, and if the light color from the effects of the oxalic acid is not desirable, melt it in a pan without water and stir in thoroughly a sufficient quntity of liquid butter color or some other pigment.

LEAD ACID PAN.

DR. D. V. BEACOCK.

Dominion Dental Journal. May.

A piece of sheet lead can be formed into a dish or cup shape by malleting it on a round ball, such as a croquet ball. This makes the best and most durable acid pan ever used, far better than copper; there seems to be no wear out to it. Enough lead should be left at one side to form a handle; lead about an eighth of an inch thick will answer.

MODELING WAX.

Scientific American, October 15th.

Best yellow wax	50 parts
Venice turpentine	7 parts
Lard	3¼ parts
Bole, elutriated	36 parts

Mix and knead thoroughly.

SOLDER TO MATCH COLOR OF COIN GOLD.

The Keystone.

Add one-tenth the weight of good twelve karat gold solder to scraps of coin gold; melt and roll out for use.

WOOD'S METAL, FUSIBLE.

Bismuth	7 parts
Lead	6 parts
Cadmium	1 part

This melts at 180 F. It is sometimes sold by traveling venders to be used in soldering a broken tooth to rubber plates, by use of soldering iron.

TEMPERING LARGE SPRINGS.

The Keystone.

Large springs, like gun-springs, should be heated evenly to a blood-red, and quenched in a good-sized dish of oil, i. e., in oil enough so it will not get heated from the steel pieces tempered in it. The spring should then be "lowered" a little by heating in a dish of oil until the oil catches fire and burns freely.

SOFT SOLDER FORMULAS.

The Keystone.

"Fine soft solder" is composed of two parts of tin and one of lead, and melts at 340° F. Ordinary soft solder is composed of one part of tin and two of lead, and melts at 441° F. Tin two parts, lead two parts, bismuth one part, melts at 229° F.; tin three parts, lead five parts, bismuth three parts, melts at 202° F. All the bismuth solders are more or less pasty, and seldom flow nicely with any flux in general use.

WETTER FOR CORUNDUM DISKS.

DR. D. V. BEACOCK.

Dominion Dental Journal, May.

Twist a piece of wire, either tinned, nickle or aluminum wire will do, as they are always bright; fasten a small bit of sponge to the end.

CEMENT FOR HARD RUBBER.

The Keystone.

Fuse together equal parts of gutta-percha and genuine asphaltum; apply hot to the joint, closing the latter immediately with pressure.

FUSIBLE ALLOY.

Bismuth	5 parts
Lead	3 parts
Tin	2 parts

Melts at 190° F. By adding a small amount of cadmium, the above will melt at 140° F.

FOR PROTECTION AGAINST SOLDER.

The Keystone.

For gold, the best protection is: yellow ochre, four parts; boracic acid, one part; the above ingredients are mixed with boiling water, to thoroughly incorporate them, and allowed to boil for an hour. The composition is applied as a paint to all the surface heated, except where the solder is to flow, as it prevents this action.

FLUXES.

The Keystone.

The best flux for soldering gold or silver is borax. The best flux for crucible-melting is fine charcoal-powder.

DROPPER FOR CEMENT SOLUTION.

DR. W. E. BUCKMAN.

Trim a piece of wood of sufficient length to reach to the bottom of the bottle, and insert it in the stopper of the liquid.

TO CLEAN CORUNDUM WHEELS.

DR. D. V. BEACOCK.

Dominion Dental Journal, January.

Wash the wheels with one part chloroform and two parts alcohol. The chloroform dissolves the wax and oil that accidentally gets on the stone; the alcohol removes the shellac, and leaves the corundum free to cut as when the stone was new.

WASH FOR CHAPPED HANDS.

Wendell recommends the following wash for chapped hands:

Green soap	1 part
Compound benzoin tincture	4 parts
Glycerine	8 parts
Rose water	16 parts

GOLD ALLOYS.

The Keystone.

18 K.	3 parts copper,	3 parts silver,	18 parts pure gold.
16 K.	5 " "	3 " "	16 " " "
14 K.	7 " "	3 " "	14 " " "
12 K.	8½ " "	3½ " "	12 " " "
10 K.	10 " "	4 " "	10 " " "
8 K.	10½ " "	5½ " "	8 " " "
5 K.	11 " "	8 " "	5 " " "

DEVICE FOR CLEANING PLIERS OF COTTON OR PAPER.

DR. ALICE JARVIS.

Items of Interest, July.

A small square of carding wire is mounted on a base and kept on the operating table. By drawing the point of the instrument through the wire, the cotton or paper is removed from it easily.

TO REMOVE STAINS OF IODINE AND NITRATE OF SILVER.

DR. GEO. A. MAXFIELD.

International Dental Journal, November.

To remove the stains of tincture of iodine, from either the hands or napkins, apply strong ammonia. The spots will immediately come out clear.

The stains of nitrate of silver, from either the hands or napkins, can be easily removed. First cover the spots with tincture of iodine, wait a few moments, then apply strong ammonia, and rub well.

TO OBTAIN PURE OXYGEN RAPIDLY.

Zinno's method consists in mixing intimately 200 gm. of powdered potassium permanganate with an equal weight of barium binoxide. On the addition of water oxygen is disengaged. With the amount stated, at ordinary temperature, 13,620 cc. of pure oxygen are generated. The oxygen is rapidly produced, and is not contaminated by chlorine, or chlorine products.

REMOVABLE FLASK PRESS.

DR. D. V. BEACOCK.

Dominion Dental Journal, July.

Instead of having the press fastened to the bench, file the heads of the screws, so that it can be removed and placed in the heater with the flask in it, if necessary.

GOLD SOLDERS MADE FROM THE PLATE BEING WORKED.

Manufacturing jewelers usually make their solder from the plate being worked, by the addition of easy flowing gold solder to scraps of the plate.

WAX SHEETS AND WAX CAKES.

DR. C. D. CHENEY.

Items of Interest, February.

The following method of making sheet-wax, discount glass plates, soap-suds, mercurialized tin plates, etc: Use a straight sided, round, porous battery cell, filled with cold water for the dipping mold. It is necessary to mark the wax vertically on opposite sides of the cell quickly after dipping to prevent the sheet cracking from shrinkage. The sheets must be flattened out before they become brittle by cooling.

Wax may be practically purified, and positively sterilized by melting it in water which is boiling, using a deep and quite narrow vessel wherein it may be set aside and allowed to cool without being disturbed. When actually cold the cake can be taken out; all the dirt having settled to the under side may be scraped off; bits of plaster go to the bottom of the water.

If the wax is wanted in cakes, it can be re-melted and cast in suitable tin pans which have been brushed over with a strong solution of white castile soap.

Dr. J. E. Harvey says: To clarify wax, melt in hot water bath; then remove from water bath and bring to a slow boil on the stove. Into the boiling wax break a fresh egg, and stir three or four minutes till the egg is thoroughly cooked. Strain through a piece of cheese cloth, to remove all pieces of egg, and you will have your wax as clean and pure as when brought from the dental depot.

TO STERILIZE INSTRUMENTS.

Dental instruments should be sterilized before using on each patient. Boiling water is efficient.

TO DISSOLVE COCAINE.

Squibb recommends the use of a half of 1 per cent. solution of boric acid to dissolve cocaine; this amount being needed to prevent decomposition.

NAUSEA FOLLOWING ANESTHESIA.

Dr. Brinton says if the patient has a great deal of nausea after etherization, iced drinks and carbonic acid water are good. One of the best remedies is chloroform, four or five drops, with two or three drops of vinegar of opium, given two or three times a day. That will sometimes allay vomiting. Another plan, when you have reason to think there will be great nausea or vomiting, is to put your patient to sleep. A great many surgeons are opposed to morphine or opium after operation. Before the operation give a little brandy or whisky, and a little morphine hypodermically; in that way do away with the necessity of giving a large amount of ether. Usually, after operation, order a hypodermic—one-sixth grain of morphine. It is not only to alleviate the pain, but to quiet the patient and the stomach. It controls the nausea and puts the patient to sleep, giving the stomach and nervous system time to recover themselves.

BLACK OXIDE OF COPPER CEMENT.

DR. W. B. AMES.

Dental Register, April.

The black oxide of copper forms with phosphoric acid and water, in proper proportions, a cement which has desirable working qualities, and a hardness and stability after crystalization which gives promise of its being a valuable addition to the list of materials for use in filling cavities, and the attachments of crowns and bridges. The most valuable property is the ability to use a large proportion of oxide in the mixture without hurrying the crystallization of the mass. With an unusually large proportion of oxide the crystallization is sufficiently slow to allow of thorough mixing and deliberate handling while filling a cavity, or setting a crown or bridge. It is peculiar in that it retains its plasticity for an unusually long time upon a cold glass slab, but crystallizes rapidly under the effect of the warmth of the body. While it gives plenty of time for manipulation, it hardens rapidly after the process has once commenced, and is harder in a few minutes after being placed in the mouth than is usual with oxyphosphate of zinc.

The crystallization of this cement, when the proper proportion of ingredients has been used, seems to be more perfect than any of the zinc oxide cements. There is a flint-like hardness.

If a pure oxide is used, free of metallic copper, there is no staining of the tooth material from impregnation. If metallic copper be present there is a gradual discoloration, similar to that from impregnation of the tooth material from some amalgams.

COTTON BRUSH FOR TENDER GUMS.

DR. J. B. LITTIG.

International Dental Journal, December.

It is simply made from an ordinary pen-holder and has a wire aluminum screw. It is very serviceable in cases where the gums have been very much congested and extremely tender, and in such cases children particularly dislike very much to have their gums brushed with a bristle-brush. These cotton-brushes, which simply consist of twisting a piece of cotton around the screw, clean the teeth very nicely indeed. Of course, the cotton is thrown away after it is used.

Take a piece of cotton and twist the screw, and it winds it on tight, and gives a simple method of carrying an astringent or anything else you want into the mouth. In every case where pyorrhœa alveolaris is treated, give the patient one of these, and tell him to dip it in listerine, or whatever else is recommended, and rub the gums well.

TO CLEAN AND BRIGHTEN STEEL INSTRUMENTS.

Medical Brief.

Clean the instruments by scrubbing with wood ashes and soft water, to remove all rust and grease; then soak them in a weak solution of hydrochloric acid in water (about ten to fifteen drops to the fluid ounce), for a few hours, to remove the remaining dust and grease; then wash them well in pure soft water. Place them in a bath, consisting of a saturated solution of tin chloride. Let them remain ten to twenty-four hours, according to the coating desired.

When removed from the bath, wash them clean in pure water, and dry well. When the job is well done, the steel will appear as if nickel-plated. The technique of the process is so simple that no one should fail to make a good job, the main points being to remove all rust and grease, and have the bath a saturated solution of chloride of tin, the immersion being continued long enough to insure a good coating of metallic tin.

COTTON AND PAPER WASTE HOLDER.

DR. D. V. BEACOCK.

Dominion D ntal Journal, July.

Take a deep glass or porcelain box, such as a tooth-powder box. Cut two slits in the top of the metal screw cover, in the form of a cross, one inch or a little more in length; press down the four points into the box; the slits will catch the cotton and pull it off the plyers or excavator. By putting in a piece of sheet lead cemented to the bottom, or a little shot to weight it, every dentist may make himself a very handy little receptacle for bits of waste cotton, bibulous paper, etc., without taking off with his fingers. It is always clean, easily made and self-acting.

TO STERILIZE INSTRUMENTS.

DR. G. S. ALLEN.

International Dental Journal.

Recommends the use of a one to one thousand solution of bichloride of mercury in rosewater, as an elegant and efficient disinfecting fluid for instruments. Contrary to the common opinion that steel instruments suffer from the use of any solution of the bichloride, he finds that they remain perfectly unaffected after being dipped in it hundreds of times. By the use of rosewater the bug-poison taste of the simple solution is entirely supplanted by an agreeable rose-flavored one. As the plain bichloride decomposes, he advises the preparation of a one per cent. solution from the tartaric sublimate tablets, and the addition of nine parts of rosewater to one of the solution when it is wanted for the disinfection of instruments or for use in the mouth.

FUSIBLE METAL FORMULAS.

Journal, British Dental Association.

	No.	Fusible metal expands on cooling.		Fusing point.
	1	Bismuth	8	Below 100°F
		Lead	5	
		Tin	3	
	2	Lead	3	197°F
		Tin	2	
		Bismuth	5	
Rose's	3	Bismuth	2	201°F
		Lead	1	
		Tin	1	
	4	Tin	1	254°F
		Lead	1	
		Bismuth	1	
	5	Tin	1	286°F
		Bismuth	2	
	6	Tin	3	333°F
		Lead	2	
Plumber's Solder	7	Tin	2	Below 350°F
		Lead	1	
Soft Solder	8	Lead	2	Above 350°F
		Tin	1	
Solder for Pewter	9	Tin	2	?
		Lead	1	
		Bismuth	1	

TO RENOVATE IMPRESSION COMPOUND.

DR. W. E. BUCKMAN.

Soften the compound in hot water, and pull it as candy-makers do candy; repeat the operation until the color is restored. All the colors will blend, and in the end be one, bright and clear.

SLAKING OF CEMENT.

Cement used for filling, after having often been exposed to the air, becomes slaked. To render it new and useful again, it is said, heat it in a porcelain dish over a sand bath.

MUSK PASTE FOR WASHING THE HANDS.

Pharmaceutical Record.

Powdered white soap	2 pounds
Orris root, in fine powder	½ pound
Starch in powder	1½ ounces
Oil of lemon	¾ ounce
Oil of neroli	150 grains
Tincture of musk	1½ fluid ounces
Glycerin	12 fluid ounces

Mix the starch and glycerin, heat with care until a jelly is formed, then add thè powdered soap, orris root, and last the oils and tincture.

HOW TO CARE FOR HAYES AND SIMILAR KINDS OF VULCANIZERS.

DR. P. R. JAMES.

Items of Interest, February.

First, before the cap is placed on the pot, take a cake of cheap laundry soap, which has plenty of rosin in it, from a saucer containing a little water to keep the under surface of the soap moist, then rub the softened portion around on top of the pot, leaving a thin film of soap. Then slowly revolve in water a few times the cap which contains the packing, to get the packing well moistened; then place it on the pot and revolve around once or twice, to thoroughly spread the soap. Soap and water seem to soften the surface of the packing, and when it is heated, the rosin in the soap cements the joint. Do this every time the vulcanizer is used and you will soon have no more trouble from steam escaping.

Next, screw on the collar and with fingers and thumb screw down the set-screws as tight as possible in this way; then with the wrench turn each screw just a little at a time until they are all brought to bear on the top with a heavy and equal pressure. Release the pressure in like manner with the wrench. With these precautions the cap will not be sprung out of shape, nor will the packing become uneven as a consequence.

The next, and the most important feature, is the stove on which it is used. The "Union" kerosene stove, or similar kinds, which

have a sheet-iron collar into which the vulcanizer rests, are wholly impracticable. This sheet-iron collar is so constructed and situated as to cause the greater part of the heat to circulate upwards directly against the rim of the pot, which presses against the packing. This rim having but little or no water next to it, becomes almost red hot and burns the packing.

Any ordinary kerosene stove without a sheet-iron collar, such as a "Tom Thumb," "American," etc., with a large wick, is far preferable. Set the vulcanizer on one of these, and the packing will be at a safe distance from the heat, and you can carry on the vulcanizing as fast as you desire.

A "Tom Thumb" or an "American" kerosene stove is a very handy thing to have in a laboratory. For one unskilled in casting metal dyes, such a stove is indispensable, as the heat is just strong enough to melt the metal, and not strong enough to over-heat them.

POLISHING AND SHARPENING INSTRUMENTS.

DR. W. H. STEELE.

Items of Interest, July.

Put into the polishing cylinder (described below) the excavator points, burs or other instruments, and put in with them about two teaspoonfuls of the finest flour of emery; close the cylinder; screw it to the lathe, and run at a good speed till all rust and spots are removed; take off the cover and examine frequently; when clean, remove from the cylinder, pour out the emery, and wipe out. Put in one teaspoonful of crocus, two of clean sawdust, a little olive oil, and the points; put on the cover and run the lathe till polished to suit; remove from cylinder, and wipe off with chamois skin.

The excavator points should now be sharpened on an Arkansas stone. The engine burs can be nicely sharpened as good as new, either with a knife-edged Arkansas stone by hand, or with a round knife-edged stone in engine.

THE POLISHING CYLINDER.

To make the cylinder for this work: Take a piece of seam-

less brass tubing, one and a half inches in diameter, inside measurement, and three inches long. Close one end by fitting in a bottom of heavy brass. Now make a heavy brass nut that will screw on to the lathe head; then solder this nut to the center of the bottom piece, and place the bottom in the cylinder, solder fast with soft solder. Next make a tin or copper cover, make it to fit on tightly, so that it will not come off during use.

FOR BURNS.

Weekly Medical Review.

The following is an excellent dressing for burns:

R Campho-Phenique .... 1 oz.
Lanolin
Ung. aquæ rosæ .... 1 oz.

Sig. Apply two or three times a day.

TO MAKE THE ENGINE RUN LIGHTER.

DR. L. H. HENLEY.

An engine will run well and much lighter by having a loose band rosined with English or "fiddle rosin." It is applied to the band by holding a piece against it while running the engine fast. To oil the engine, dip a pointed instrument in the oil and apply the small drop to the place to be lubricated.

BREATH PERFUME.

Dental Office and Laboratory, September.

Powdered extract of liquorice ... 3 ounces.
Refined sugar .... 1 ounce.
Powdered tragacanth .... ½ ounce.
Oil of cloves .... 1 dram.
Oil of cassia .... ½ dram.

Beat together with water enough to form a stiff mass, which make into very small pills or lozenges, as desired. These are usually coated with silver leaf by being rolled in it while still moist.

NICKEL REMOVING SOLUTION.

La Metallurgie.

In order to remove a coating of nickel which does not adhere well, M. P. Dronier recommends that the article should be plunged in an oxidizing liquid composed of bichromate of potash, sulphuric acid and water in the proportions ordinarily used for batteries. The article should then be taken out more or less quickly according to the thickness of the deposit and washed and, if necessary, repolished.

FUSIBLE METAL.

Tin	20 parts.
Lead	19 parts.
Cadmium	13 parts.
Bismuth	48 parts.

Melt tin first, then add lead cadmium and bismuth. This melts at 150° F.

BOTTLE FOR MIXING SLAB FOR CEMENT.

DR. GEO. EVANS.

Dental Cosmos, November.

The writer says frequently the temperature of the office is so great as to interfere with the proper mixing of cement. To overcome this, he fills a three or four ounce flat prescription bottle with ice water and mixes the cement on it.

SOAPSTONE SLAB FOR HEATING GUTTA-PERCHA.

Dental Review, July.

Dr. W. A. Stevens uses a soapstone slab for heating gutta-percha. He says it retains the heat well and is superior to any other method. The size is four by four inches and seven-eighths of an inch thick.

TO MAKE LATHE TOOLS.

The Keystone.

Mushet's steel is a special steel much employed for turning and planer-tools. It can be annealed so as to be filed, by heating to a dark red in a charcoal-box and allowing the box to cool very slow while covered in ashes. It requires no hardening in the usual way—that is, heating and quenching in water. Anneal a piece as above directed, file, drill, or otherwise shape it, and then heat to a cherry-red and allow to cool in the air of an ordinary room, and it will be found as hard as is necessary for a cutting-tool for lathes or other purposes.

TO MAKE FLEXIBLE FILES.

Odontographic Journal, October.

Cover the files with heavy oil and burn off in a bunsen flame. Pumice applied with a brush restores the color.

GOLD-PLATING WITHOUT A BATTERY.

The Keystone.

No gilding-solution without a battery or dynamo gives satisfactory results—except one is very easily satisfied. For a gilding solution without a battery, use "gold fulminate," made by adding ammonia to a solution of chloride of gold. Chloride of gold, as bought at the druggists', costs more than double the value of pure gold. It can be made by dissolving pure gold in aqua regia—the latter being a combination of two parts of muriatic acid with one part of nitric acid. One-third the volume of water should be added. It will require about ten ounces of the mixed acids (before water is added) to dissolve one ounce of gold—smaller quantities in proportion—employing troy or apothecaries' weight. The gold should be either granulated, very fine, or rolled extremely thin, or it will require a great deal of time to effect its solution. Heating the acids expedites the process. After the gold is dissolved the excess of the acids and water should be evaporated, to obtain the brown chloride of gold. For a pennyweight and one-half of

gold (before dissolving), a pint of distilled water should be added to redissolve the gold chloride; to this solution add strong ammonia as long as any precipitate takes place. This precipitate is fulminate of gold, and should be well washed. Place in one quart of water in which one ounce of cyanide of potassium has been dissolved. Any brass, copper or German silver article, well cleaned and suspended by a zinc strip in this solution, becomes gilded in a few seconds. Fulminate of gold, when dry, is highly explosive, but is tolerably safe if kept wet.

SOFT SOLDER DESTROYER.

The Keystone.

Proto-sulphate of iron	2 ozs
Nitrate of potassa	1 "
Water	10 "

Reduce the proto-sulphate of iron (green copperas) and nitrate of potassa (saltpetre) to a fine powder, then add these ingredients to the water and boil the preparation in a cast-iron saucepan for some time; afterward allow the liquid to cool, and in doing so it will shoot into fine crystals; if any of the liquid should remain uncrystallized, pour it from the crystals and again heat it, when, on cooling a second time, it will have become crystallized. The crystallized salt should then be dissolved in muriatic acid in the proportion of one ounce of salt to eight ounces of acid. Now take of the latter preparation one ounce, and add to it four ounces of boiling water in a pipkin, keeping up the heat by means already stated. In a short space of time the most obstinate cases of soft solder will be cleanly and entirely removed, and without the work changing color, if these instructions are properly carried out in preparing the mixture, etc.

TO REMOVE THE ODOR OF IODOFORM FROM THE HANDS.

Wash the hands once or twice with flaxseed meal in water.

SILVER PLATING WITHOUT A BATTERY.

The Keystone.

Prepare a solution as follows: Crystallized nitrate of silver one drachm, dissolved in two ounces of soft water; water from melted ice is good. Make this solution in a glass or earthen vessel by itself. Cyanide of potassium, three drachms, dissolved in one ounce of water. This solution is also made by itself. After a perfect solution of the salt in each vessel they are poured together, and instantly turn almost black, but this turbidity soon subsides and the solution becomes clear; then add one ounce of whiting, or what is better, precipitated chalk. To use this solution, after shaking, to diffuse the whiting, pour no more than you will use into a glass or earthen dish (metal will not do, as it decomposes the solution) take an old stub of a cleaning brush and dip in the solution and brush the parts to be restored, throwing them in a glass of clear water. After well rinsing, dry on a soft towel or in boxwood sawdust, carefully removing such dust with a soft brush, and the parts so treated will be like new.

REMOVING BROKEN INSTRUMENT FROM ROOT CANAL.

Items of Interest, December.

Dr. L. G. Taylor says he has succeeded in removing a broken drill by magnetizing an instrument introducing it into the root, which on removal would be followed by the broken piece of steel.

ALLOYS CALCULATED BY VALUATION.

The Keystone.

Most workers in gold have rules for calculating alloys, some of which are quite lengthy and difficult to remember. About the simplest and easiest rule to remember is one based on the value; that is, assuming gold to be worth four cents a carat fine. Gold is actually worth a little more; pure gold being worth one dollar for 23.22 grains, or $20.67.183 per ounce. American gold coin is nine hundred parts out of one thousand fine, or 21.6 carats.

Suppose we have fifteen pennyweights of coin gold to be reduced to fourteen carats. Coin gold 21.6 carats fine, at four cents a carat fine, would be worth 86.4 cents a pennyweight, and fifteen pennyweights would be worth $12.96. Now the question is simply—how much fourteen-carat gold is worth the same money? By this rule, fourteen-carat gold is worth fifty-six cents, and we divide $12.69 by 56, and find 23.146 pennyweights of fourteen-carat gold worth the same. We subtract fifteen (the weight of the coin gold) from the weight of fourteen, worth the same money, and we have 8.146, which is the amount of alloy to add to reduce 21.6 carats to fourteen-carat. The same rule will apply to any carat.

TO PREVENT RAPID EVAPORATION OF CHLORA-PERCHA.

DR. L. P. BETHEL.

Ohio Journal Dental Science, September.

In using chlora-percha in root cavities, if the chloroform evaporates too rapidly, add a little oil of cinnamon, or wintergreen, and it will remain soft a long time.

TO BEND GLASS TUBES.

DR. W. H. STEELE.

Items of Interest, October.

This process can be used for shaping tubes of one inch or less in diameter. Take common river sand and run it through a fine seive, in order to remove the coarse particles. Fill the tubing it is desired to bend with the fine sand; put a cork in each end of the tube; make a small hole in each cork, for the escape of steam which may generate in heating. Hold the part of the tube to be bent obliquely above the flame of an alcohol lamp, gradually lowering it into the flame as it heats; when pliable enough, bend to the desired shape. Have a pan of hot sand ready, and instantly imbed the tube in it; this will cool it slowly, keep it from cracking, and leave it with a good temper. For handling the tube while manipulating it, use asbestos paper to protect the hands.

STERILIZING INSTRUMENTS.

DR. A. W. HARLAN.

Dental Review, July.

Says he prefers a solution that is not odorous, one that can be made with water in preference to an oil for that purpose. For all the usual purposes of sterilizing instruments a ten per cent. solution of boro-glycerine in water will disinfect your forceps, broaches and cutting instruments, and will leave them without a bad smell. That is one solution that may be used. A saturated solution of the silico-fluoride of sodium, which is a cheap drug, can be used to disinfect instruments after they have been cleaned, and there is no odor or taste to it.

ANTISEPTIC DENTISTRY.

DR. GARRET NEWKIRK.

Dental Review, July.

The author in treating this subject, lays down the following practical suggestions:

If water pressure be available, the fountain cuspidor. If not, then one nickel-plated, to be cleansed after each patient's use, kept partly filled with water, and daily scalded.

Hot water always ready for use upon instruments, and for cleansing the hands of the operator. The hands cannot be so thoroughly cleansed with cold water as with warm.

An abundant supply of towels and napkins. There should always be a clean napkin on the bracket upon which are laid the instruments, and this should be changed often. Buy plain towels, one of which will make two napkins cut to fit the bracket. I have observed dentists using merely the cloth cover of the bracket which had become stained and saturated till it was a sight to behold if not to admire. One could scarcely imagine anything better calculated to promote surgical uncleanliness.

An indispensable convenience for purposes of cleanliness consists in the use of three or four inch squares of bleached muslin. such as one may buy for five or six cents per yard.

In removing tartar, or treating a case of pyorrhœa, one of

these squares is held in the left hand, serving to hold the lip, and when the instrument needs wiping it is used for that purpose, and consigned to the waste basket and the fire. Use them for the wiping of burs and excavators, for stripping the soiled cotton from broaches when cleansing pulp canals, for absorbing blood, etc., for laying hold of loose pieces of amalgam or tartar in the mouth, for receiving the tooth just extracted, for wiping the mouth mirror or the hand glass, for use with a little alcohol or chloroform to cleanse the points of the pliers when gummed with sandarac, for removing dirt from the engine hand piece, etc., etc.

A great convenience, one that was suggested by Dr. Harlan, consists in a number of small cups or jars for holding burs. One is able by this means to keep them assorted and only use those which are clean. As a rule, when a bur has been used once or twice its glory has departed, and it should go at once into the waste or a convenient box kept for those which may be worth resharpening. On the bracket, too, should be a receptacle for burs which have just been used and one may wish to use again after they have been cleansed and disinfected.

All burs when received, either new or resharpened, should be given a coat of some disinfectant oil, for insurance against both rust and infection, and the rule applies equally to excavators, scalers, forceps, clamps, etc., which after cleansing are put in place to await use.

A simple and convenient device for the use of heat to clean instruments, is the following: Take a small tin or copper tea-kettle, having a straight spout. Have the tinner attach to the lid of the kettle two or three tubes an inch in diameter and long enough to reach nearly to the bottom. These closed at the bottom and opening outward, may be used for dry heat or oil, while all the long instruments may be dipped in boiling water through the spout. Any sort of small burner will keep the water at the boiling point with but little trouble or expense.

A BRILLIANT ALLOY.

Scientific American.

An alloy of 78 per cent. gold and 22 per cent. aluminum is the most brilliant known.

BLUESTONE FOR POLISHING.

This stone is used with such fine effect by jewelers that dentists might find it useful in many ways. The stones can be had of jewelers' supply houses.

The "Keystone" says it is a peculiar kind of slate with particles of gritty matter combined. Very even in its grit, and well adapted for many purposes in watchcraft. Bluestones for jewelers' use generally come in square slips about five or six inches long and from three-eighths to three-fourths inches across the sides. They are prepared for use by rubbing with emery on a ground-glass slab until flat and smooth. The glass and stone are now thoroughly washed to remove all grit, when the sides are rubbed with water only on the ground glass until perfectly smooth. It is well to rub the corners to a slight bevel, to prevent chipping. The stone is now rubbed over with clock oil, as much as will lie on it and not run off. As fast as the oil soaks in it is renewed for three days. It is now wiped dry with a cloth, and the flat surfaces on two sides burnished by rubbing with a piece of half-polished sapphire, which produces a half-glazed look to the stone; the sides so burnished producing the brilliant polish on the brass setting. The unburnished sides are used to smooth the surface of brass and take out scratches, and the sides, burnished with sapphire, is employed for the mirror-polish. A bluestone so prepared lasts indefinitely, except the oil gets absorbed and the burnished surface gets scratched; in such cases re-oiling and re-burnishing restores the stone.

PRACTICAL ELECTRO-PLATING.

Jewelers' Circular.

The following solution for gilding to be used with a common battery, is sufficient for a 4 gallon jar:

GOLD SOLUTION.

Chloride of gold .... 4 ozs
Cyanine of potassium ....12 ozs
Concentrated ammonia, sufficient.

Dissolve the chloride in sufficient pure boiling water, then by

the use of a very small quantity of concentrated ammonia, precipitate the gold from the solution. Let the matter stand until settled; pour off the water; repeat the operation two or three times, taking the care not to wash out the gold. Now dissolve the cyanide in hot water; this must be done in a vessel wnich is to hold the solution; pour in the gold and boil.

NICKLE SOLUTION.

To 1 gallon of water add from 1 to 2 pounds of nickle salts; boil and stir until cold.

SILVER SOLUTION.

Chloride of silver	10 ozs
Carbonate of sodium	12 ozs

Cyanide of potassium, enough to take up the silver.

Make the same as for gold plating.

BRASS SOLUTION.

Sulphate of copper	3 lbs. 6 ozs
Sulphate of zinc	3 lbs. 6 ozs
Carbonate of sodium	15 lbs.
Bisulphate of sodium	5 lbs.
Cyanide of potassium	6 lbs.

Dissolve the sulphates of copper and zinc in hot water; dissolve 10 pounds of the carbonate of sodium in hot water, and add to the first. Let the mixture settle, then pour off the water, and repeat two or three times. Now dissolve the remaining 5 pounds of carbonate and the bisulphate of sodium, and add; then dissolve the cyanide of potassium in hot water; add the other substances, and let the mixture set for two or three days before use.

COPPER SOLUTION.

Sulphate of copper	10 lbs.
Carbonate of sodium	22 lbs. 2 ozs.
Bisulphite of sodium	7 lbs. 6 ozs.
Cyanide of potassium	5 lbs.

Dissolve the sulphate of copper, and 17 pounds of the carbonate of sodium; add together, wash, and repeat as in the brass solution; now dissolve the remaining carbonate and bisulphite of sodium; add; dissolve the cyanide of potassium and add. Let the mixture stand two or three days, then use.

The above solutions may all be used with the aid of a dynamo or common Bunsen or Smee cells. The solutions may be placed in jars or tanks, over which two brass rods are stretched, connecting with the poles of the battery. An anode corresponding to the solution in the jar must be attached by means of a coppei wire tc the rod connected with the positive pole, while the cathode or article to be plated should be attached to the negative pole.

BRASS DIPS.

Equal parts of sulphuric and nitric acid, to which a small quantity of muriatic acid is added, must be prepaeed. Cleanse as if to plate, that is, dip into hot potash solution, then into cold water, before placing in the acid, where it must remain but for an instant; then at once into and shaken about in cold water, thoroughly washing off the acid; then into hot water and sawdust.

To secure the perfect cleanliness necessary to the article to be plated, there must be placed near at hand, solutions of boiling hot carbonate of potassium, plenty of perfectly clean hot and cold water and a solution of cyanide of potassium.

BRONZE.

This result is obtained by plating the article in copper or brass, and dip it in a hot solution of sulphide of potassium.

OXIDIZED SILVER.

Plate the article in silver, and dip it into a solution of either of the following: bichromate of potassium, bisulphate of sodium, or chromic acid.

OPERATION.

First place the article which is attached to a copper wire, for a moment in the hot potash to remove all vegetable substance, then quickly plunge it into cold water, which should be running, then into cyanide; once more into cold water. The article is now chemically clean, and ready to be placed in the plating solution. Judgment must now govern the plater, when to remove the article and plunge into clear cold water, and then immediately into clean hot water, and last into boxwood sawdust, where it must be shaken until dry.

If the article should now be dim from an excess of gold, a small wire scratch-brush should be placed in the lathe, and the

article gently brushed, all the time being kept moist by frequent dipping in a solution of soap and water. Silver may be brushed in the same way, but it is generally burnished. Nickel, copper and brass are buffed.

GUTTA-PERCHA HANDLES FOR SMALL INSTRUMENTS.

DR. H. BARNES.

Ohio Journal Dental Science, August.

Take base plate gutta-percha, warm it and mould around the end of broaches or other small instruments; when cooled it answers admirably as a handle.

WORKING STEEL—MAKING BROACHES.

DR. THO. F. CHUPEIN.

Dental Office and Laboratory, July.

For all ordinary purposes of the dentist a sufficient softness may be attained to enable the steel to be filed, or turned in a lathe, by heating it to a bright red heat and then laying this on a piece of board, another piece of board is then laid on this and the two pieces screwed tightly into a bench vise and permitted to cool.

TEMPERING.

To temper steel, it is first made as hard as possible. This is accomplished by heating the instrument to a bright red color and then suddenly plunging it into a bowl or other receptacle of cold water. As a test of its hardness, the steel assumes a grayish white appearance, and in this condition it will readily scratch glass, or a file is incapable of cutting it.

The instrument thus tempered would be too hard to work with, for if brought to a keen edge in this condition the edge would be continually snapping off, and require continued sharpening. It is, therefore, necessary to draw the temper. For such instruments as are used by the dentist, this may be accomplished as follows:

The hardened instrument is first brightened or polished at the point where it is necessary to watch the temper. This is done by

means of sandpaper or with a brush wheel charged with pumice stone, in the polishing lathe or in any way most convenient; so that the part is bright. The instrument is then held in the blaze of the spirit lamp about an inch or more from the cutting edge. By watching the brightened surface of the instrument it will be seen to change color as the heat affects the metal. The first color will be a light straw, then a dark straw, then a light blue, and finally a dark blue. These colors will follow each other in the order named. Thus when the first color appears it will run along the instrument towards the point of its least magnitude, to be succeeded by the next color and then the next, and so on. As soon as the blade of the instrument indicates a light straw, it should be plunged into water, this color being the best for cutting tools, like excavators. Some persons find this color a little hard, which, if such is the case, the instrument is apt to snap, being brittle, so that they prefer to let the color run to the dark straw. Dark straw, as a general rule, is more adapted to pen knives, lancets and the like, which are not subjected to the cutting of such hard tissue as enamel or dentine. Enamel chisels should be tempered to a light straw. It is said that steel may be rendered intensely hard by heating red hot and plunging into a vessel of mercury. By this process the silvery gray or white, indicating the most intense hardness of steel, is always produced.

Probes and nerve extractors are readily made from piano wire, without removing the temper from the piano wire. A piece of wire of the necessary size and length is mounted with a handle of any hard wood, and made secure therein with gum shellac. About one and a half inches from the end it should be ground to a gradual taper, by holding it in the hand, and turning it round and round, while holding it against a revolving corundum while in the polishing lathe, the wheel being kept wet while so doing. A more gradual and more regular attenuation can be obtained by laying the probe on a bench or table, and giving it a wiping motion from the place where the gradual taper begins, to the point, turning the instrument round and round while so doing; but Dr. Bonwill suggests a still better way, and that is to cut a disk of semi-vulcanized rubber—packing rubber—out of a sheet of this with a gun wad punch, make a hole in the center and place it in a Huey mandrel. Place a sandpaper disk with the grit towards the rubber disk;

place this in the dental engine and turn it, holding the probe between the rubber and sandpaper disk, and turning the probe while so doing.

For making a hooked probe with which to remove a devitalized pulp, the procedure will be the same as that above described. When the probe is reduced to a very fine point, the point is passed quickly to and fro through the blaze of the spirit lamp, so as to soften the point in order to bend it to make the hook. The late Prof. Buckingham suggested the following manner of forming these hooks:

One nose of a pair of small, flat nose pliers is brought to a very fine point, either by grinding one nose or by removing the temper and filing, and re-tempering it. When the nose of the pliers is thus formed, the probe is placed between the noses, permitting only so much of the probe to extend beyond as is sufficient to form the hook. The probe is then hammered over on the attenuated nose of the pliers so as to form the hook, as shown by the supplementary cut in the same figure.

PUBLICATIONS.

DENTAL JOURNALS.

AMERICA—WEEKLY.

Dental Tribune, Chicago, Ill. Masonic Temple. Editor, Louis Ottofy, D. D. S. Price $2.00.

MONTHLY.

American Journal Dental Science, Baltimore, Md., 9 West Fayette St. Editors, F. J. S. Gorgas, A. M., M. D., D. D. S., Richard Grady, M. D., D. D. S. Publishers, Snowden & Cowman. Price $2.50.

Dental Cosmos, Philadelphia, Pa., Chestnut, cor. Twelfth St. Editor, E. C. Kirk, D. D. S. Publishers, S. S. White Dental Manufacturing Co. Price $2.50.

Dental Register, Cincinnati, Ohio, 117 West Fifth St. Editors, J. Taft, M. D., D. D. S., W. H. Whistlar, D. D. S., N. S. Hoff, D. D. S. Publishers, S. A. Crocker & Co. Price $2.50.

Dental Review, Chicago, Ill., 66 Madison St. Editors, A. W. Harlan, M. D., D. D. S., C. N. Johnson, L. D. S., D. D. S. Publishers, H. D. Justi & Son. Price $2.50.

International Dental Journal, Philadelphia, Pa., 716 Filbert St. Editors, James Truman, D. D. S., Jos. Head, M. D., D. D. S. Publishers, International Dental Journal Publication Co. Price $2.50.

Items of Interest, Philadelphia, Pa., 1413 Filbert St. Editor, T. B. Welch, M. D. Publishers, Wilmington Dental Manufacturing Co. Price $1.00.

Ohio Dental Journal, Toledo, Ohio. Editors, Geo. Watt, M. D., D. D. S., L. P. Bethel, M. D., D. D. S. Publishers, Ransom & Randolph. Price $2.00.

Southern Dental Journal, Macon, Ga. Editor, H. H. Johnson, D. D. S. Price $2.00.

Western Dental Journal, Kansas City, Mo., 900 Grand Ave. Editor, J. D. Patterson, D. D. S. Publishers, R. I. Pearson & Co. Price $2.00.

BI-MONTHLY.

Dental Office and Laboratory, Philadelphia, Pa., 620 Race St. Editor, Theodore F. Chupein, D. D. S. Publishers, Johnson & Lund. Price $1.00.

Dental Journal, Ann Arbor, Michigan. Edited by students. Price $1.00.

Dominion Dental Journal, Toronto, Canada; Post office box 298. Editors, W. Geo. Beers, L. D. S., A. H. Hipple, L. D. S., A. C. Cogswell, D. D. S. Publishers, Dominion Dental Journal Co. Price $1.00.

QUARTERLY.

Dental Practitioner and Advertiser, Buffalo, N. Y., 587 Main St. Editor, W. C. Barrett, M. D., D. D. S. Publishers, Buffalo Dental Manufacturing Co. Price $1.00.

Dental Headlight, Nashville, Tenn., 216 N. Summer St. Editors, H. W. Morgan, M. D., D. D. S., Ambrose Morrison, M. D. Publishers, Morrison Brothers. Price 50 cents.

Dental Luminary, Macon, Ga. Editors, W. R. Holmes, D. D. S., J. M. Mason, D. D. S. Publishers, W. R. Holmes & Mason. Price 50 cents.

Odontographic Journal, Rochester, N. Y., 117 State St. Editor, J. Edward Linn, D. D. S. Publisher, Geo. P. Davis. Price $1.00.

Pacific Dental Journal, Tacoma, Washington. Editor, W. E. Burkhart. Publishers, Burkhart Dental Supply Co. Price $1.00.

Texas Dental Journal, Dallas, Texas, 719 Elm St. Editor, not given. Publisher, A. P. Cary. Price $1.00.

ENGLAND—SEMI-MONTHLY.

British Journal of Dental Science, London, 289 Regent, W. Editor, not given. Publishers, J. P. Segg & Co. Price 14 shillings.

MONTHLY.

Dental Record, London, 6 to 10 Lexington St. Editor, not given. Publishers, The Dental Manufacturing Co. Price 7 shillings.

Journal of the British Dental Association, London, 20 and 21 King William St., Strand. Editor, not given. Publishers, Bailliere, Tindall & Cox. Price 7 shillings.

FRANCE—MONTHLY.

L'Odontologie, Paris, 57 rue Rochechouart. Publisher, M. F. Touchard. Price 10 francs.

Le Monde Dentaire, Paris, 37 rue de la Chausse d'Antin. Publisher, Paul Vasseur. Price 3 francs.

L'Avenir Dentaire, Paris, 37 Boulevard de Sebastopol. Editor, Dr. Delaunay. Publisher, F. Menetrrier. Price 5 francs.

Le Progres Dentaire, France, 22 rue du 4 Septembre. Editor, not given. Publishers, C. Ash & Son. Price 10 francs.

Revue Internationale D'Odontologie, Paris, 2 rue d'Amsterdam. Editor, Paul Dubois. Publisher, Paul Dubois. Price 10 francs.

Revue Odontologique, Paris, 3 rue de l'Abbaye. Publishers, L'Association de l'Odontologique. Price 10 francs.

GERMANY—WEEKLY.

Journal fur Zahnheilkunde, Berlin, Chausseestrasse 1 a. Editor, Dr. Erich Richter. Publisher, Erich Richter. Price 8 marks.

Zahnarztliches Wochenblatt, Hamburg, Bei dem Zippelhause 7–9. Editor, Dr. Andreae. Publisher, F. W. Rademacher. Price 8 marks.

MONTHLY.

Deutsche Monatsschrift fur Zahnheilkunde, Liepzig, Konigsstrasse 18. Editor, Jul. Parreidt. Publisher, Arthur Felix. Price 14 marks.

Monatsschrift Des Verrins Deutscher Zahnkunstler, Leipzig, Konigsplatz 17.II. Editor, Arthur Stolper. Price 9 marks.

BI-MONTHLY.

Die Zahntechnische Reform, Berlin, Friedrichshagen. Editor, G. H. Pawelz. Publisher, G. H. Pawelz. Price 7 marks.

QUARTERLY.

Correspondenz-Blatt fur Zahnarzte, Berlin, Berlin, Jager Strasse 88. Publishers, C. Ash & Son. Price 5 marks.

AUSTRIA—BI-MONTHLY.

Odontoskop, Budapest, Gizella-Ter 2. Editor, Iszlai Jozsef. Publisher, I. Jozsef. Price 2 marks.

QUARTERLY.

Oesterreichisch-Ungarische Vierteljahrsschrift fur Zahnheilkunde, Vienna, Goldschmiedgasse nr. 2. Editor, Julius Wiess. Publisher, Julius Weiss. Price 5 marks.

SWITZERLAND—QUARTERLY.

Schweizerische Vierteljahrsschrift fur Zahnheilkunde, Zurich, Bahnhofstrasse 94. Editor, Dr. C. Redard and Dr. Theo. Frick. Publisher, Societe Odontologique Suisse. Price 10 francs.

ITALY—MONTHLY.

La Scienza Dentaria Revista Mensile, Florence, Prezze d'Abbonamento Annuo L. 6. Editor, Francisco Cianchi. Publisher, Societa Florentins dei Dentisti. Price 8 lira.

Il Progresso Dentistico, Milano, Via Meravigli 2. Editor, Dr. Carlo Platschick. Publisher, Carlo Platschick. Price 10 lira.

La Reforma Dentistica, Napoli, Via Bellina 27. Editor, Prof. G. Cali. Publisher, G. Cali. Price 8 lira.

BI-MONTHLY.

L'Odontologia, Palermo, V. Montevergini 2. Editor, Luigi Ribolla-Nicodemi. Publisher, Luigi Ribolla-Nicodemi. Price 5 lira.

QUARTERLY.

Giornale Di Corrispondenza Pei Dentisti, Milano, Via Tomaso Crossi. Editor, Cav. Dott. Alberto Coulliaux. Publishers, C. Ash & Son.

DENMARK—MONTHLY.

Skandinaviska Tandlakareforeningens Tidskrift Copenhagen, Radhusstraede 1. Editor, Carl Christensen. Publisher, Martius Truslsens Bogtrykkeri. Price 4 Kr.

RUSSIA—MONTHLY.

Messager Odontologique, St. Petersburg, Newsky No. 79. Editor, Dr. A. P. Sinitzin. Publisher, A. P. Sinitzin. Price 20 p.

SPAIN—MONTHLY.

LaOdontologia, Cadiz, San Jose No. 2. Editor, Dr. Floreatan Aguilar. Publisher, F. Aguilar. Price 10 pasetas.

NORWAY—MONTHLY.

Den Norske Tandlaegeforenings Tidende, Christiania. Editor, O. Seel.

CUBA—MONTHLY.

Revista Dental, Havana, Salud 39. Editor, Alberto Colon. Publisher, A. Colon. Price $2.50.

JAPAN.

Dental Journal, Tokio. Publisher, Qusaburo Midsuhoya.

BOOKS AND PAMPHLETS PERTAINING TO DENTISTRY,

PUBLISHED DURING THE YEAR.

BOOKS.

A Treatise on Dental Jurisprudence for Dentists and Lawyers, by Wm. H. Rehfus, D. D. S. Wilmington Dental Manufacturing Co., Philadelphia.

Anæsthetics, Their Use and Administration, by Dudley W. Buxton, M. D., B. S., London. P. Blakiston, Son & Co., Philadelphia.

Catching's Compendium of Practical Dentistry for 1891, (Second Volume) by B. H. Chatching, D. D. S., Atlanta, Ga.

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